

COAL AGE

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A TIME FOR SELF-ANALYSIS

By FLOYD W. PARSONS

NO matter whether a man is getting one, five, or fifteen thousand a year, the last days of December are a time for him to examine himself closely. If you think you are a success, try and discover why. If you are getting two or three times what others under you are getting, determine whether you really excel and deserve the higher pay. There is nothing safe and permanent in just being lucky. If you are dissatisfied with your year's results, discover where and how you have failed.

Have You Been LOYAL?

Nothing is more irksome and laborious than half-hearted service; merely mechanical diligence is never enough. You must put heart into your work and not always be looking over the edge of it. The heart must inspire what the hands execute. The one-talented man who is loyal and devoted will accomplish infinitely more than the ten-talented man who lacks this essential quality.

Have You Been ENTHUSIASTIC?

There can be no victory without enthusiasm. It is the salt of life; that indefinable quality which forces conviction and transforms visions into realities; that mysterious something which multiplies mediocre ability and heightens the powers of perception. It is not easy to find enthusiasm among people who grovel on the lower plane of being.

Have You CULTIVATED OPTIMISM?

Every man should educate will power so that it will focus his thoughts upon the bright side of things. A habit of looking for the best of everything strengthens character and elevates ideals. Whether the world you live in is chiefly good or bad depends on how you take it. If a man is miserable, it is almost always his own fault. Optimism means hope, and hope springs from wisdom; it knows how slight a circumstance may change the whole course of events. Effort soon ceases where there is no hope.

Have You Been JUST?

Without justice there cannot be love, confidence or respect—three things on which all industrial rule is founded. Might does not make right, and nothing

is settled until it is settled right. A reputation for impartiality is of great value. Decisions should be made without reference to who is in the scales; they must be governed by the cause, not the person; they must be fair whether the motives are understood or not; they must be according to principle and not reckon the cost. One unjust decision will send a feeling of distrust through a whole organization.

Have You Been PATIENT?

Anybody can get into a rage; it is the exercise of endurance that requires most effort and constitutes the real test of character. Pains and sorrows are killed by enduring them, while, on the other hand, if you feed your cares with frets and worry, they are only made strong to bite and sting you. It is just as important to learn to wait as it is to learn to labor. Nature is a worthy guide. In her realm it is generally true that the best harvests are the longest in ripening. It is not pleasant to work in the earth pulling weeds, but it is as necessary as sowing the seed. Patience extinguishes envy, subdues pride and bridles the tongue; without it, the mind cannot be said to be disciplined.

Have You Been SYSTEMATIC?

Order is Heaven's first law. Regular habits compel economy of time. You must not, however, be a slave to method; you must make it your servant. If that which is first at hand be not quickly and regularly dispatched, other tasks will accumulate behind until the pressure of affairs will result in hopeless mental confusion. Success does not depend upon the amount of work you do so much as upon the amount of intelligent work. Many men fail ignominiously who do enough to achieve a grand success; but they labor

at haphazard, building up with one hand and tearing down with the other. An unanswerable argument favoring a systematic existence is the benefit that results to your health, for nature's price for health is regularity. You cannot bottle up sleep to-night for to-morrow night's use, or force your stomach to-day because you expect to eat sparingly to-morrow, or become exhausted from overwork this week expecting to make it up later.

Have You SPOKEN WITH DISCRETION?

There is no greater problem than in knowing when to speak and how much to say. Most men say too much and talk too often, while some speak too little. Many men would be more successful and more respected were they less garrulous. Other men who are clever and deserving trust entirely to their daily results to gain them recognition when a little dignified self-assertion would have helped their individual cases. Big bosses nowadays are mightily occupied, and many a good employee suffers from inability to advertise his worth, or from failure to attract attention to his achievements. Lots of excellent fellows are doing all the work, while some man a little higher up is getting all the credit. Self-denial that means self-effacement is not a virtue, but a weakness. There is, of course, often a power in silence which no words can equal. The most powerful forces in nature are the quietest. Gravity acts continuously with scarce a ripple of sound, and electricity serves effectively with little noise. Bluster indicates that inferiority is endeavoring to rise into consciousness. However, even the observance of silence can be carried to an extreme that is more harmful than beneficial. Your problem is to strike a common-sense average in how, when and what to say.

Have You Been QUICK TO JUDGE?

One great cause of much unhappiness is the tendency of some men to live in an atmosphere of suspicion and attribute some hidden motive to every act that comes to their notice. The majority of this kind of thin-skinned people are merely over-sensitive, but the results they bring about and the conditions they create are as injurious as though their action was purposely vicious. If you must answer to some man higher up, and he is frequently preoccupied and seemingly indifferent to your accomplishments, there is no excuse for his littleness, and the company that employs him will surely have to pay for his unsympathetic, tactless administration. However, there is even less reason for an employee to retard his own advance by magnifying supposed grievances until the prime objects for which he is striving are lost sight of through his envelopment in a cloud of self-pity. The modest man has everything to gain, but you can stoop too low to gain too little. The exercise of modesty does not demand the denial of merit, or require you to have no opinion or choice. Fretting is a useless habit; it only fosters the faults it seeks in vain to correct. The usual fortune of complaint is to call forth contempt more than pity. If we slight small injuries, they usually disappear. It is, of course, hard to believe that others cannot see what seems so plain to you; however, everything is in the position you happen to occupy. Don't go into the business of finding fault with other people's work and then call yourself a practitioner of constructive criticism. If you despise light, don't puff at the little flame that cheers others, and don't forget that the men who find the most fault are usually those who do the least to effectively destroy the evils complained of. The man who can please nobody is not so much to be pitied as he whom nobody can please.

Are You a TRUE PATRIOT?

IF YOU view your country as the concrete expression of a high principle, you possess the fundamental idea of patriotism; however, if you look upon these United States as only a certain area of land containing mountains, rivers and woods, your conception of citizenship is a lifeless thing. Patriotism is quite different from partisanship; it may be defined as doing the right thing solely for right's sake. Do you believe that the real wealth of a nation lies in the character of its people? Do you believe that manhood is greater than property? Do you believe that things done for love are better and more lasting than things done for selfish gain? Do you believe that battles won without a struggle are often won without honor? Do you believe that a nation should care more for its word than for its life? Do you believe that success which comes from trampling on others is not worth having? Do you believe that what happens to you is not important if thereby the cause of freedom and the dignity of humanity are maintained? Do you believe that any government that violates the bond of a sacred promise is the common enemy of humankind? Do you believe that the only chivalry worth having is that which pays deference to the aged, protects the feeble and respects womankind?—Then, if you do believe these things, no matter whether you are a miner at the face, a superintendent on top, or the company president, you are one of God's noblemen wherever you are, and you are also a credit to this land of freedom.

Ideas and Suggestions

Conservation of Mine Timbers

BY W. H. NOONE
Thomas, W. Va.

A mine hitherto using large quantities of timbers might do with considerably less by a little attention to room-and-pillar work. When a room is finished the pillars should be immediately drawn so that timber and other materia! may be recovered as the men work back.

Timber that is recovered in good condition answers the same purpose as new timber; if it is not broken, it probably can be used again and again before it has had opportunity to decay. In this way a continuous service can be obtained from the timber on hand, which would not be the case where the timber is lost in robbing, or the room allowed to stand indefinitely before the pillars are drawn. A room kept standing for a long time usually has to be retimbered before it can again be worked.

When material is scarce rooms should not be driven up full distance unless the pillars can be drawn back when the room is finished. It should also be the endeavor to keep ties, rails, switches, etc., as well as timber, in continuous service so far as possible.

Entries are usually narrow, and where the roof is good little timber is required. It is not practicable to drive rooms narrow, because narrow work is usually based on yardage and one or two props are generally sufficient to a yard of room work, and would cost considerably less than yardage. It might be advisable and practicable to narrow down the rooms to a width where one row of props might answer the purpose of the

two or three rows used hitherto. Narrow rooms are safer and less expensive to drive and rob.

Where the roof is soft and friable the foregoing recommendations may not be practicable, and crossbars and posts will have to be used. Under these conditions entries will demand the same attention as rooms in regard to the roof.

The material now on hand in the mines should be conserved, however difficult it may be to recover and keep in constant use. It may cost something to redeem some material, but it will be cheaper than buying new or being left entirely without.

Locomotive Bumpers

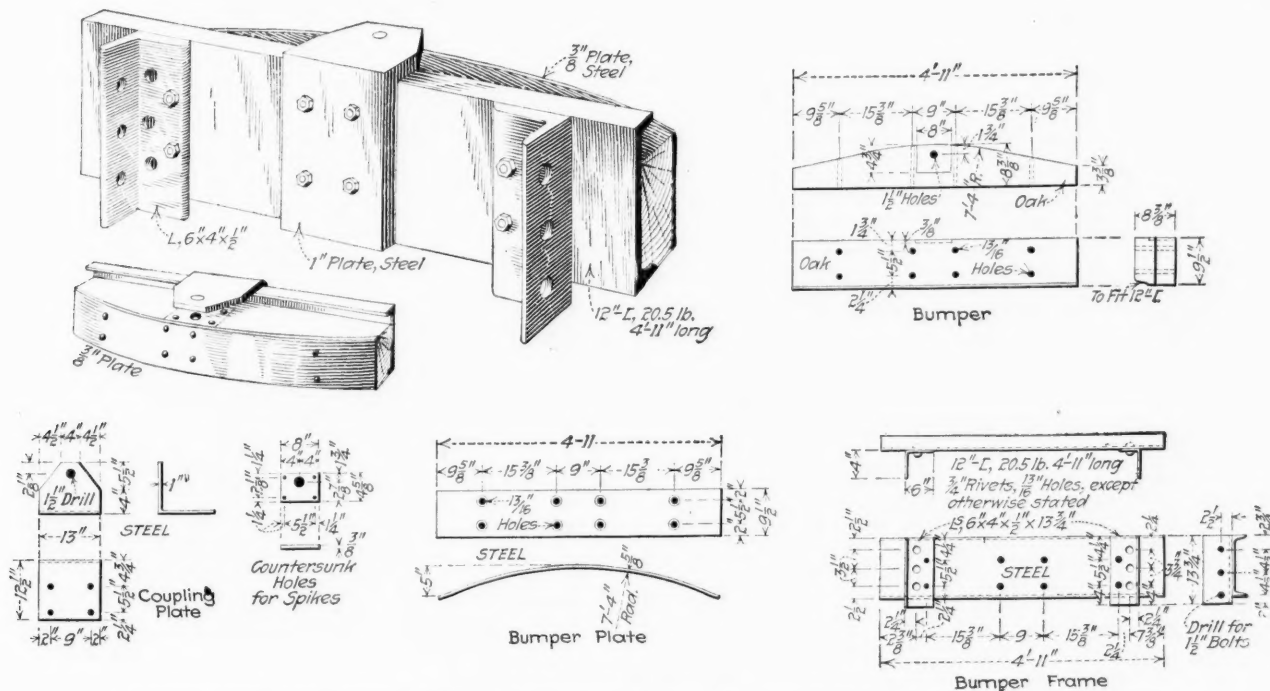
BY R. Z. VIRGIN

Superintendent of Mines, Wheeling Steel and Iron Co.,
Wheeling, W. Va.

During the past year, it has been extremely difficult to procure repair parts for mine locomotives, and deliveries in some instances took from three to six months,

Our mine cars weigh, when empty, approximately 3175 lb. and carry an average load of 4300 lb., making a total loaded weight of 7475 lb. With this weight of loads constantly bumping against the locomotives, which have cast bumpers, we have had probably 15 or 18 bumpers broken yearly.

The delay in getting these bumpers, and the loss occurring from the locomotive being in the shop, prompted us to fall back on the use of wooden bumpers, reinforced with channels or steel I-beams. The sketches herewith



DIMENSIONS AND DETAILS OF A LOCOMOTIVE BUMPER THAT CAN BE MADE AT THE MINE

show the dimensions in detail. After the material is procured, it can be cut and assembled by any mine blacksmith and mine carpenter. This method of repair will be found far cheaper than the use of cast bumpers furnished by the makers of the locomotives. These bumpers can be made at the mine and kept as ordinary "mine spares."

Need Careful Preparation of Coal

BY VAN H. MANNING

Director of the Bureau of Mines, Department of the Interior.

There is one phase of the present coal situation which may put an entirely different light on the supposed increased production of coal of the present year. In round numbers, there was produced 600,000,000 tons of fuel last year. Statement has been made that 50,000,000 more tons will be mined this year. The preparation of this increased quantity of coal has not been as good as in time past.

Analyses of a number of samples show in many cases a greatly increased quantity of ash. Repeated cases are brought to the attention of the Bureau of Mines where coal which would run from 6 to 8 per cent. ash in normal times is running from 12 to 18 per cent. of ash in these abnormal times. Complaint about the preparation of coal is very general, and it is not at all improbable that 5 per cent. more ash is included in this year's coal than in previous years.

If such a figure is true, it means that 32,500,000 tons of the estimated output of 650,000,000 tons is nothing but increased ash. If we can imagine over 600,000 car loads of ash being added to the present burden of transportation, the evident effect on car supply and transportation troubles would be seen. If this were the end of the matter, it would not be so bad; but there is another factor well known to engineers which is apt to be overlooked by the nontechnical user.

The results of a number of quite extensive experiments carried on by the Government at the St. Louis Exposition showed that with the coals used, there was a decrease of about $1\frac{1}{2}$ per cent. in efficiency for each 1 per cent. addition to the ash content of the coal—that is to say, the inclusion of more ash with the coal decreases the value of the fuel not only the amount equal to the useless ash, but it makes the remaining good coal less effective to the extent of $1\frac{1}{2}$ per cent. for each 1 per cent. of ash. The inclusion of 5 per cent. more ash in the fuel, therefore, means a reduction in efficiency of the remaining good coal of about $7\frac{1}{2}$ per cent., which added to the 5 per cent. useless ash, makes a total reduction in effectiveness of $12\frac{1}{2}$ per cent.

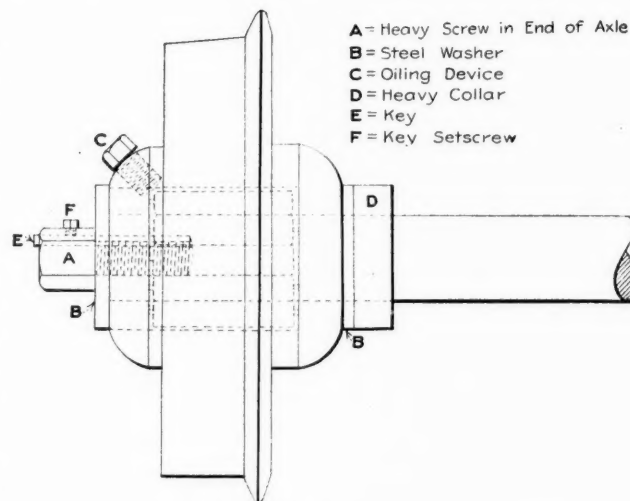
According to this point of view, although 650,000,000 tons may be produced in 1917, its effectiveness as compared with previous years is probably about seven-eighths of this, and equivalent to a production of normally prepared coal of about 570,000,000 tons. We have, then, instead of an increased production as compared with last year, an actual decrease of effective coal of about 30,000,000 tons. If this is added to the estimated increased needs, due to our accelerated activities, of 100,000,000 tons, we have a deficiency of the equivalent of 130,000,000 tons, instead of 50,000,000 tons to make up by good engineering and true fuel conservation in the boiler room.

Fastening Wheels to the Axle

BY C. J. CREVELING

Blackwood, Va.

The accompanying illustration shows a method of repairing roller-bearing mine car wheels that have been rendered unserviceable through the failure of the device that holds them to the axle. Different manufacturers employ different means of attaching the wheel to the axle upon which it revolves, and it has been my experience that this device, regardless of its nature, is the weakest part of the wheel. Consequently, wheels are often discarded and scrapped before they are half



METHOD OF REPAIRING MINE-CAR WHEELS

worn out. There is now about the mine with which I am connected, and I suppose also about every mine that uses roller-bearing mine cars, a large number of wheels that so far as spokes and tread are concerned would run four or five years longer. By reason of the weak axle-attachment device, however, they are now of no value except as scrap.

After considerable experience with such wheels, I decided to keep them in service in the manner shown in the drawing. A hole was first drilled through the end of the wheel hub and into the axle. The hole in the axle was then tapped out and a heavy capscrew bearing a steel washer to prevent the outflow of grease was passed through the end of the wheel hub and screwed into the axle. This capscrew is then keyed in place as shown, the key in turn being held by a setscrew.

Several wheels attached to 3-in. axles in this manner and carrying a car of 120 cu.ft. capacity have been in successful operation for several months. These cars are lowered down an incline 1500 ft. long and then hauled by motor over sharp curves for approximately a mile to the tippie. After six months of this extremely severe service, it was found that this device had satisfactorily held and that no trouble whatever had been experienced with this method of fastening.

As roller-bearing wheels at present cost approximately \$16 each, the savings made possible by this method are immediately apparent. I pass this scheme on to others, therefore, in the hope that they also may derive benefit therefrom.

Anthracite Coal Stripping—I

By THOMAS F. KENNEDY

Scranton, Penn.

SYNOPSIS—*The first and one of the most important steps in coal stripping is the prospecting of the stripping area. Too much information cannot be had. In most instances the proposed area must be carefully drilled and complete records kept of the results obtained therefrom.*

THE purpose of this article is to explain the general principles of practical engineering applied to an anthracite coal-stripping proposition. Stripping is the preliminary operation of removing clay, rock or other stratum overlying a bed of coal and is followed by the open-pit method of mining the coal. The stripping problem is divided into seven main parts which, in order of consideration and importance from the engineers' point of view, are: Method of prospecting; determination of economic stripping limit; calculation of overburden and coal quantities; staking out the economic stripping limit; removal of overburden and coal; estimating quantities of overburden and coal removed, and, finally, tabulation of results.

Prospecting, the first step in a stripping problem, is the highly important factor which determines the profitableness of the stripping, and too much stress cannot be laid upon it in working out its every detail. Before the actual work of prospecting begins, the engineer should be acquainted with all the probable stripping-area information, such as surface and coal rights, inside conditions of workings adjoining the probable stripping area, the outside topographic features, location of nearest point of preparation, water-supply for operation, and other important facts and details that are characteristic of each individual stripping operation.

After making a thorough investigation and study of the foregoing facts, the actual work of prospecting should begin. In determining the quantities and character of overburden and coal, there are five common, practical methods: Inside bed sections, abutting the stripping area; examination of outcrops; churn drill; diamond drill and, finally, test pits.

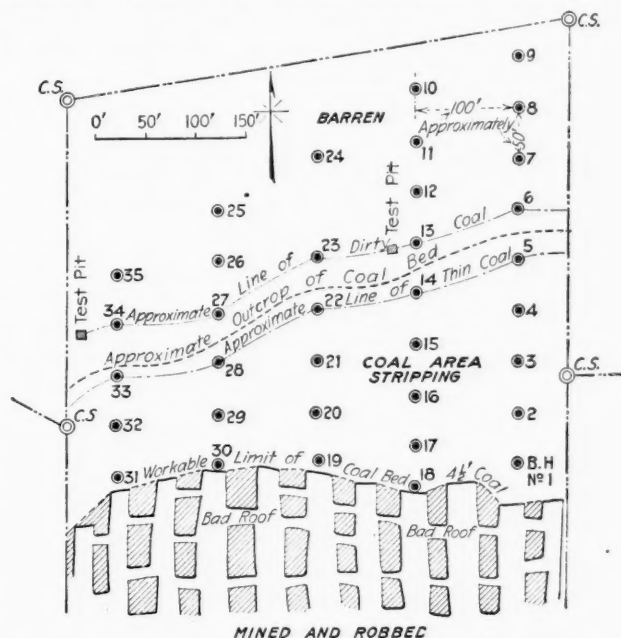
The first method—inside bed sections—is always used when the proposed stripping area is a portion of a surface coal bed whose mining has been discontinued because of bad roof conditions or probable thinning out of coal. The bed sections along the workable limit may be obtained from information shown on old maps, by looking up old surveys and, if possible, by making an investigation of the faces of the chambers adjoining the stripping area. The latter plan should be taken advantage of, because a knowledge of not only the bed sections but also the general character of the coal bed, in reference to its strike, dip and roof conditions, can be thus obtained.

Study of the outcrop of a coal measure should not be overlooked by the prospecting engineer. In the upper anthracite regions, with which I am familiar, there are many well-defined outcrops which have led

to strippings on a large scale. A cross-section of the bed, if available, should be procured and the proximity of the seam to the surface should be investigated. This information will oftentimes trace an exposure of coal on the surface where valuable data may be obtained.

When more positive information is desired, the diamond drill is the best method of prospecting. In ascertaining close measurements of coal beds and intervening strata of a coal area, the diamond drill is generally used. The foregoing advantage is offset by the higher cost of diamond drilling in comparison to other methods. This is due largely to the stationary equipment and the cost and labor in handling it. In most cases this method should never be used in drilling for surface coal.

The most efficient method of drilling for stripping is the churn drill, which is used in almost all stripping



SHOWING PROPERTY LINES AND WORKABLE LIMITS

prospecting. One of the best churn drills on the market today is the Sanderson Cyclone churn drill. This machine has many advantages over the diamond drill. A 6-in. churn drill, equipped with a 12-hp. engine, can be purchased for the price of a good diamond bit, showing the difference in first cost between the two drills. Its mobility saves time, which is an important factor in cost. With an experienced driller running the machine, close results, within 1 per cent. of error, as to coal and strata thicknesses can be obtained. This is good enough for practical purposes.

By the use of the churn drill the cost of drilling per foot can be reduced as much as 60 per cent. in comparison with the diamond-drill method. In summing up the good points of both the churn and diamond drills, the superiority of the former over the latter can readily be seen. It is my opinion that in almost all cases of the prospecting of coal for stripping purposes the churn-drill method should be used.

In order to explain clearly the churn-drill method of locating the approximate stripping area of a worked-out and probable surface coal bed, a typical problem with map showing property lines and workable limit of the measure will be assumed. It will be further conditioned that mining had been discontinued because of bad roof.

The question of stripping has its inception from the following facts: That the faces of the chambers at the workable limit show 4 to 5 ft. of coal with a clay covering and a soft shale roof and additional information of a few old records of boreholes showing several feet of coal north of the workable limit (see map). From the available information a thorough investigation and study of both inside and outside conditions relating to the probable stripping area is made. It is decided from certain positive data that the area should be further examined by means of churn drilling.

The first step in the prospecting of the area is the approximate location of the underground workable limit upon the surface. This is done by placing several stakes 50 ft. apart on the projected workable limit, using the cut stones or some other surface features as a base. Having defined the property lines and the workable limit, upon the surface, the work of drilling begins.

Referring to the map, the churn drill should put down the first hole in the position marked No. 1, about 50 ft. north of the workable limit and 25 ft. from the east property line. The record of the hole drilled shows the coal thickness to check up closely with the inside bed section near the hole location. The hole should be drilled deep enough to check up the coal bed underlying the surface bed, if such a condition exists. After finishing hole No. 1, the drill should be moved to position No. 2, fifty feet north of the first hole and parallel to the east property line. The topography of the area will often determine the movement of the drill. The problem assumed is an ideal one.

Studying the map, borehole No. 5 shows a thinning out of coal, No. 6 dirty coal and No. 7 no coal. The machine should be moved 50 ft. and then 150 ft. north of No. 7 hole, to verify the fact that the bed has not thinned out and then made its reappearance. The drill is then moved to position No. 10, 100 ft. away from the first line of holes, and drilling holes successively in a southerly direction should continue.

This method of procedure is followed until the area is thoroughly prospected. If the overburden is composed of clay and soft shale 10 to 20 ft. thick, test pits 3x8 ft. should be dug so as to ascertain the quality of the coal. The record and number of each hole should be kept by the driller in charge. A stake bearing the number of each hole should be driven about 2 ft. therefrom, to enable the surveyor to furnish the correct data to the draftsman.

The final step of prospecting is the engineer's calculation of the cost of labor, supplies, depreciation of drill, repairs, etc., so that the cost of drilling of the various strata per foot can be figured.

In conclusion it may be said that the prospecting question is a vital part of the stripping problem and should be studied thoroughly and comprehensively from every angle so as to leave no uncertainties.

(To be continued)

Alaska Coal Lands Offered for Lease

Official announcement was made on Dec. 11 by Secretary Lane of the Interior Department that a new coal-leasing block or tract has been created and offered for lease in the Matanuska coal field, Alaska. This block, designated as Unit No. 20, contains 760 acres of land, embracing parts of Sections 2, 3, 10 and 11, Township 19 North, Range 3 East, Seward Meridian. The land lies near the headwaters of Eska Creek and to the northeast of Unit No. 7. A branch line of the Government railroad has been constructed to the mine on No. 7, and consequently rail transportation facilities for shipping coal mined off the new unit are practically available at this time. The new unit has been designated upon recommendation of representatives of the department who examined the land and who report that the coal measures found warrant the offering of the area as a coal-mining proposition. The land had not been surveyed when the original units were offered for lease.

Under the order designating the new unit, applications for lease of the same will be received at the General Land Office from and after Dec. 15, 1917, for a period of 30 days. All applications for lease that may be made in this period will then be advertised for an additional 30 days and award made thereafter by the Secretary of the Interior from the applications and proposals that have been submitted.

By the designation of this new unit the area of lands in the field now subject to lease is increased to 7520 acres, divided into ten leasing units.

In the Matanuska field the Alaskan Engineering Commission is mining coal on Blocks 7 and 12 for the construction and operation of the Government railroad. About 16,000 tons of coal have thus far been mined from these units. The lessees of Blocks 2 and 3 started work on these tracts in May. They are reported to have run about 600 ft. of underground tunnels and drifts in the blocking out of a 10 or 12-ft. vein of coal. The lessees of Blocks 10 and 11, situated at Chicaloon, are at the present time taking in machinery and equipment with a view to active development on a large scale.

It is believed that the coal-mining operations now under way, together with the railroad facilities that are being provided, will further demonstrate the possibilities of supplying coal from this field for the use of the Navy and on the Pacific Coast. The Government railroad is now completed and able to handle tonnage from this field to Anchorage at Tidewater. By next summer the railroad will also be able to haul tonnage to Seward, the coast terminus of the road.

Information relative to the lease of the Alaska coal lands may always be procured by addressing the Commissioner of the General Land Office, Washington, D. C.

Two Deposits of Lignite Are Worked in the Province of Beyrut in Syria—One is the Ainmade mine, which lies near the village of Kermael and yields about 1000 tons annually. The other occurs at Haitoora near Jezzim and produces about 500 tons per year. Outcrops have also been traced in the valley of the Nahrelkalb. Both deposits are capable of yielding larger outputs. In the Lebanon, coal that is probably lignitic is reported from Faloogna near Hamana, as well as at Abdin near Bekfaya and Mreyjatt. The first-named locality was the seat of a native exploitation which was undertaken on a small scale to supply the silk factories of the district with fuel.—Leon Dominian in Transactions of the A. I. M. E.

The Fuel Administration—Its Task*

By DR. H. A. GARFIELD
United States Fuel Administrator

WHEN President Wilson appointed Dr. Garfield as United States Fuel Administrator, in accordance with the provisions of an act of Congress known as the Lever Act, he certainly handed out a man-sized task. Many factories are running on three shifts, right round the clock, on work ranging from the manufacture of ammunition and motor trucks to the turning out of uniforms and small parts of airplanes—and they all must have coal to keep going. The Allies need coal; the Navy cannot exist without it; Canada requires coal; and our own normal demand has gone up. It's a case of first, coal; second, coal; third, coal. Combine this ravenous appetite for fuel with the scarcity in coal cars and the inadequate transportation facilities afforded by the railroads—to be discussed in next week's issue—and you have some idea of the problem that Dr. Garfield and the Fuel Administration are up against.

IN setting up an organization, the difficulty is one that you who have at any time engaged in projecting an organization to carry out some large purpose will appreciate, especially if the carrying out of that purpose has run with the period, or run with the activity of organization. To build your house and live in it at the same time is no easy task. We were compelled to adopt a working hypothesis to govern us in our organization and to proceed upon that hypothesis, in the hope that our plan would be a workable one.

Briefly, the scheme of organization of the Fuel Administration was this: We set up the Federal control here in Washington, appointed the state fuel administrators in each of the states of the United States and in the District of Columbia, requested each one of those fuel administrators in turn to appoint county and municipal administrators, vested in the state fuel administrators full power to distribute the coal within the state, made it clear that so far as the county and municipal administrators and their committees were concerned the administration here at Washington delegated full power, both in appointment and in control, to the state fuel administrators. It was, you see, in a measure, a United States—there was the Federal, the state, the county and the municipal administration.

I am the more impressed with the significance of this organization just at the present time, because in Ohio, my native state, there has been some difficulty reflected in the morning papers, owing to the fact that Governor Cox, with an admirable zeal for distributing coal to the people and institutions of Ohio, has crossed the lines of the Federal Fuel Administrator, Mr. Johnson, thinking thereby to accomplish a good purpose. But it is very easy to see that if coal upon the tracks consigned in one direction is taken, as it may be, under the law, by the representative of the United States Fuel Administrator and diverted to an immediate need, it is impossible that there shall be anything other than confusion if some other authority runs across that plan and undertakes also to divert coal. I presume the Governor of Ohio hasn't sufficiently absorbed the idea that underlies the organization of a Fuel Administration.

Let me touch upon one policy that is reflected in the organization, and, at the same time, has intimately to do with meeting the problem presented. The United States Fuel Administration isn't responsible for the way coal is deposited in the earth. If we take the right

view of it, I think we will admit that mankind is there beholden, as in all other things, to the Creator of the universe. The coal is deposited throughout the United States in various regions, and obviously to allow our state administrators to draw upon that coal and limit them won't do, because in a place like Ohio, for instance, where there is coal in abundance, the state administrator would be able to supply the people of Ohio abundantly, and might, if he were selfishly disposed, neglect those who were in states in which no coal was deposited. Therefore, from the beginning, I have pursued the plan that in governing production and distribution from the mines, the Federal—that is, the United States Fuel Administrator—must be the director. On the other hand, when it comes to distributing the coal within the borders of the state, that is a matter much better left to the state fuel administrator than to attempt to distribute from this common center.

There are three factors entering into the production of coal—first the operators, then the mine employees, and third the railroads. Unless each one of these is working at efficiency, we will not have maximum results in output.

About the time the Federal Fuel Administrator was appointed, the bituminous interests of the country got together and formed a national organization. Undoubtedly that organization has desired things which the Federal Fuel Administrator hasn't been able to furnish; possibly that organization may entertain ideals of policy that do not appear in the same light to the Federal Fuel Administrator, but if the latter is true, I haven't yet discovered it.

A large part of my time was spent during the first two months, and indeed much of my time is still occu-

THE United States is this year producing something like 50,000,000 tons more of bituminous coal than it produced last year, and last year was a record year. "Why is there a shortage?" Because we needed 100,000,000 tons more than last year, the extra 50,000,000 tons which we needed, but have not had, amount to the same thing as if there were a shortage of supply. The extra demand comes from the fact that the United States is at war, that our manufacturing enterprises must be supplied with coal, that the railroads of the country, taxed beyond their powers, must have more coal to operate as they are now operating, to say nothing of the normal increase in the call for domestic coal.

*An address delivered before the Editorial Conference at Washington, D. C., Thursday, Dec. 13, 1917.

pied, with bringing together operators and representatives of labor, who in certain fields of the country are not able quickly to adjust their differences, and I have just one theme that I always present to those gentlemen when they come together, and it is this: Whatever your controversy, wherever the right lies, make sure that production continues and be not interrupted by reason of your dispute. That theme cannot be overemphasized. It doesn't make any difference, gentlemen, what the controversy is, it must not be allowed to halt the production of coal in the country at this time.

I also wish here to pay tribute to labor, because the leaders, the conservative element in labor, have caught the idea not because it was enunciated by me (I was only one voice saying the same thing), but because it is the spirit of our people at the present time that in prosecuting this great war, in meeting the emergency which we are called upon to meet because of it, labor, realizing these facts, has come forward in the very best of spirit, saying that it will not permit labor to cease to do its part. Wherever there is a failure in that program, it is because of the inevitable radical element that we find in every business in every country.

Now, I am very far from saying that no good comes out of radicalism. Human nature is so constituted that there are always some at the extreme right and some at the extreme left of every proposition; but in a time of emergency, when action is necessary, when we must spend less time in deliberation, when it is not feasible to educate everybody, as it is in times of ordinary conduct of affairs, it is perfectly obvious that the extremes must be brought together and action taken, even though the conservative thinks that we are going to wreck and ruin, and even in spite of the fact

IT IS significant of the anthracite field that, with the total amount of labor in normal times, something like 175,000 men and boys at the mines were reduced by 25,000, because of the draft and because of the fact that employment elsewhere has appeared more attractive. But in spite of the fact that there are only 150,000 men and boys laboring in the anthracite field this year, against the 175,000 normally, the anthracite mines have produced something like 20 to 22 per cent. more coal than they produced a year ago. That plainly is a tribute both to labor and to those who are conducting the mines.

that the radical believes we are not going nearly far enough. So then, the radical element in the whole field has been a distributing element, but it has been held in check by the great mass of the working men in the coal fields, and with relatively slight interruptions production has gone forward.

There is an element in human nature that we ought not to lose sight of, and though it is painful to comment upon it, it is necessary to comment upon it; the selfishness of human nature, the disposition, to use a common phrase, to hog things. Now, there has been a great deal of that sort of thing this year. It has extended into the households, people buying more coal than they quite needed; it has found its way more naturally into the factories, anticipating an increase of business, and the result is that some, many indeed, have more coal than usual, some have more coal than they need for the entire year, and some less provident, possibly because they could not provide the store ahead, are without coal.

Dr. Garfield Answers Some Questions

Question—Are our rivers being used to their fullest extent in the shipment of coal at the present time; if not, why not?

Answer—The rivers are not being used to their fullest extent; one may say the same thing as to the railroads, but in the case of the rivers, the accustomed channels for the distribution of coal had been provided otherwise. Now, whether the railroads have in times past, by the law of protection, got more than their due share of the coal transportation, I am not prepared to say. I know that when it came to the question of using the rivers we were not equipped to make the maximum use of them that should have been made. And, of course, there was no time to provide the extra equipment. That is being provided for more and more, however, now.

Question—Why is it that coastwise towns like Providence, R. I., have to pay more for coal than interior towns like Worcester and Springfield?

Answer—The freights by water have gone up largely because of the fact that the ocean-going tugs have been requisitioned by the navy, and, therefore, transportation by water is decreased. May I say in that connection that Governor McCall was in my office, and I gave him the information that I have just arranged within a few days with the Secretary of War and with the Secretary of the Navy coöperating, and with E. N. Hurley, of the Shipping Board, that we shall have the supply of ships necessary to transport our coal by water. The Secretary of War stated to me that if it became necessary to do so, he would detail mine layers, too good for the operation, as a matter of fact, but nevertheless quite sufficient, to pull the barges around from the tidewater ports here to New England. Also, Mr. Hurley is directing that certain boats brought down from Montreal shall be put into the New England trade; and

further than that, I am making a request (this looks forward to another season) that the new shipbuilding corporation shall build for us tugs that will be ready for service by the time next season comes around. But for the immediate future, the mine layers and other boats, including some tugs that Mr. Willard tells me will be relieved from the New York service, will be used to carry the coal into New England.

Question—Regarding the matter of utilities, I understand that they are put in a priority class for consumption and not for storage. I read in the paper this morning that two plants operating in large industrial centers are without a sufficient supply of coal and have asked industries to close down. What will the Fuel Administration do with utilities in that matter, and to what extent will this supply be for current use? I mean by "current use," will it be for a day or two, or for a longer period?

Answer—The moment we receive the information that a public utility is out of coal, or in danger of being out of coal within a few days, we issue the orders to send coal to that utility. I don't know that that fully covers your question.

Question—The Washington papers stated that in the Baltimore and Pittsburgh sections the Government had to request industries to close down—industries using electrical power—because of the shortage of coal. I know that the priority order puts the utilities in a class where they can get coal for current consumption (that was issued by the Food Administration, I believe); now, the point I'd like to ask is how soon can these companies get coal and to what extent will they be kept in a supply of coal, so that such an emergency will not arise and so the shipyards will not be closed down.

Answer—Any utility that will inform us of its impending

lack will receive supplies of coal; that is, we will issue the orders right off to divert to those utilities enough coal to keep them going. Now, a severe spell of weather, such as we have just had, may defeat the arrival of that coal in time, but all we can say about that is that that is liable to happen any season, and furthermore, that the utility should speak far enough ahead and speak in the right form. A mistake is made by not coming to the right place. If the utility will let the state fuel administrator know the necessity, and the state fuel administrator will thereupon inform this office here, immediately orders will be sent out to certain specified mines. In other words, we every day issue orders to a series of mines: "Send so many carloads of coal to this, that or the other point," and we issue those in the order of need. It constitutes a priority in distribution or apportionment of the coal.

Question—May I ask, Dr. Garfield, as to the status of the proposal to pool quantities of the mines?

Answer—The Ohio pool is the one that has, so to speak, the best stock. Homer Johnson, the fuel administrator for Ohio, brought the suggestion to me (whether it originated with him or with the operators in Ohio, I cannot say) about the Ohio pool. It is a terminal pool, as distinguished from a pool at the center. It is working out well, so far as I can learn. It is only in the early days of its organization. I believe your question does not go to the method of its operation, but merely what state it is in now.

HOW THE POOLING ARRANGEMENT IS WORKED

Question—I wondered whether a manufacturer who had a partial supply of fuel for his gas producers, for example, and for his byproduct, too, and ordinarily bought a supply of coal in the market, whether his own supply of coal would go into a pool supply in case there was a pooling, or whether the pooling of the coal would be a pooling of the merchant supply, or whether the mine or his company would have to throw the supply of coal into the pool.

Answer—The whole supply would go from the shipper; that is, the operator, the mine, would go into the pool. Let me use an illustration. Here is a pool at Cleveland. All of the coal that was to be shipped to anybody, whether under contract or not, in the vicinity of Cleveland, would go into the pool at Cleveland, and then would go out of the pool in accordance with the sales or contracts of the person putting the coal into the pool. If you, for instance, an operator, sent coal to the Cleveland pool, you would send it there and at the same time inform the pool manager that you had sent, say, ten carloads of coal to that pool and that five of those carloads were to be shipped to a certain person and five carloads to another person. Now, the point of the pool is, you would send ten cars in and the purchasers would get ten cars, one five and the other five, but not necessarily your coal, and it does not make any difference whether it is under contract or not. If it isn't under contract, you must provide orders that it be shipped out within 24 hours.

Question—If you were a producing consumer of coal—that is, you were a manufacturer and produced your coal—your own coal would go into the general pool and you would only get perhaps a part of the coal that you yourself produced; that is, your normal supply might be reduced?

Answer—I am not informed whether those who are producing coal entirely, exclusively for their own use, have consented to go into the pool or not. Perhaps Mr. Morrow knows. Have you any such, Mr. Morrow, in the pool?

Answer [by Mr. Morrow, secretary of the National Coal Association]—I can't answer that specifically, but the point of his question, so far as it relates to byproduct coal, may be answered in this way: Byproduct coal needed in any plant will not be moved. That coal ordinarily moves in solid trainloads, and will not be interfered with. That refers to companies who have their own mines. They are not included in the pools now, but later on may be included.

Question—In another address to us it was emphasized that the effect of car shortage in reducing the output of the mines, and the question was being discussed as you came in, to what extent various causes were operating to produce that car shortage. I'd like to inquire to what extent there is congestion in the tidewater and other important terminals.

Is it not a fact that a large amount of freight is tied up in the terminal yards and makes it very difficult to move coal cars promptly and ties them up too long a time in their shipment, so that they are slower getting back to the mine?

Answer—Undoubtedly that contributes to it. When a crowd of vehicles and cars are tied up at a street corner, it is difficult to determine which car or vehicle is producing the trouble—they are all producing it. And yet it is true that the congestion at the terminals is one large contributing factor, perhaps the largest of any.

Question—To what extent does the authority of the Fuel Administration extend in ordering a mine to ship coal to the transportation company?

Answer—I think it extends a good deal further than some other. The reading of the act is that the Fuel Administration has control of the apportionment and shipping of coal—I haven't hesitated, therefore, but another section states that all the agencies of the Government shall perform such service as the Fuel Administrator may require of them. If the railroads were controlled by the Government, the task would be simple; I could then issue the order. Railroads being in private hands, I can ask for priority orders and make requests of them, but I haven't any power to force the railroads to do a thing asked for.

Question—Mr. Morrow expressed the opinion that the reason for the coal shortage is the lack of cars by the railroads. You mentioned an important reason for the coal shortage: The demand for 50,000,000 tons of coal to be produced. From other sources, it has been said that the fixing of the low price for bituminous coal has discouraged the output of a great many mines. I'd like to ask if all three of these things are the cause, or if there is any difference in importance in these three things?

Answer—Undoubtedly the fixing of a lower price than the operators had hoped would be fixed played its part, and yet I can't prove it. It looks as if the proof went the other way. The President's order went out on Aug. 21 and the second order on Aug. 23. The reports of production for the week beginning Aug. 18, and straight along for the next few weeks, increased each week. There was a larger production each week than the preceding week, and a larger production than the year before. So it is difficult to say that the appearance of the President's order fixing the price halted production. In fact, only in one week since the President's order has come out was there a drop that was materially below the production of last year, and the average is considerably above. So, you see, the elements are lacking to prove that the appearance of the President's order was a damper on production. All you can say about it, and that anybody can assert, and I suppose the negative can't be proved, is that if it hadn't been for the President's order, the production would have been much larger than it is now.

DISCOURAGES CLOSING OF PUBLIC SCHOOLS

Question—I am in some way connected with the public schools of our city. Tomorrow we have to determine whether or not we shall declare a vacation for the winter for the purpose of conserving coal. I'd like to know what Dr. Garfield's opinion is on that important matter.

Answer—My judgment about that is that it is very poor economy, unless we are actually forced to do it, to shut down schools. Some little time ago the Governor of Vermont sent me a telegram asking whether we were considering closing up the schools for the second half of the year—something of that kind. He said the suggestion had come from somewhere on the outside. We, of course, made the response that we do with any suggestion that comes in, that we thank the person for offering it and that it will receive consideration; but I am bound to say that this particular suggestion has never received serious consideration. I think the schools ought to go on.

Question—Can you tell us anything about how much coal is saved by cutting out electric illumination at night—signs, etc.?

Answer—I wish I could give you accurate figures. I am disappointed in the results. I think that less was saved than we anticipated, and I am about to change that order. We will go at it from another angle. I think the difficulty was

this—in fact, I know that it was—in cutting out only the large display signs not serving as a direction to a place, but only as an advertisement of a product—the general effect in the city was not great. You missed certain signs, but that was only in case you were familiar with the city. I think the result was less productive of saving than we expected it would be, and I shall change the order; but I don't propose by any means to give up the idea of saving in the United States on signs and white ways. We want to interfere less with business and accomplish better results.

Question—Dr. Garfield, I'd like to present this matter: Where an industry depends upon its own power for this service, but has difficulty in obtaining its coal, and the proposition is made by the public service corporation for shutting down its plant, are the chances better for the company to unite with the public service corporation engaged in furnishing electricity for power than to depend upon the Fuel Administrator for the necessary coal to keep the plant running, when, as a matter of fact, this same coal would be burned in either instance?

Answer—I doubt if one could answer that clearly, except in a specific case. I should say, nevertheless, attempting to answer it generally, that there is more economy in working through public utilities; but if, on the other hand, your public utility is already overloaded, obviously you have got to resort to some other way. If your public utility is so located that it has peculiar difficulty in getting its coal supply, one would answer the question otherwise, so that while I would answer it in that way in general, I would have to recognize the existence of several exceptions.

Question—I'd like to ask—returning to another question of price and shipping brought up before—if the price had been higher and production at the mines greater, would it be of any value, under present conditions, or are we producing all the coal that we can handle?

Answer—That question is a very pertinent one, because it is obviously true that if the roads are now clogged and can't deliver what we have on the rail, how much worse position would they have been in if we had produced more coal from the mines. The railroads say to us at the present time, return empty cars; but we say to you that when the roads are already clogged, why return more empty cars and add more coal to the confusion? Clear up what we have got first. I think that the transportation system of the country, as it stands today, is not able to take care of more than is now being produced. I think it may be possible to transport more under the arrangements which are now in the making.

Question—To what extent have the public service commissions been willing to cooperate with plans of your department in regard to the economy suggested by you for public utilities?

Answer—No sufficient return has been received yet to answer that. So far as I know, there is no disposition to do other than cooperate.

Question—Has anything been done to increase the production of power for industries by the use of water power?

Answer—No efforts are being put forth to introduce any substitutions of that kind, because they won't meet with the present emergency. Where there are hydro-electric operations, however, the request, of course, is that they depend as far as possible upon the water power, and indeed they would do it without our asking, because it is a cheaper way. There are many good plans of various kinds that could be introduced if we had time to introduce them. I want to say in that connection that report came to me last week that a good many of the hydro-electric operations in the country (this person happened to have come from the South) have stocked up with more coal than they need under the circumstances, so I suspect that that is one of the places where coal has been taken on in larger quantities than it need be.

Question—Do you consider the coal shortage more difficult than the fuel oil shortage just now, whether you are considering substituting fuel oil for coal in industry?

Answer—I should say that fuel oil is in the long run less serious; the coal is more serious because of the fact that it happens that our large munitions factories are depending upon coal, not for fuel oil—that is, in larger proportion.

MINECDOTES

The Story of the Hot Bearing

The master mechanic and the mine boss were sitting in the compressor room waiting for the night shift to go on duty, and to divert themselves in the interim were acting after the manner of master mechanics and mine bosses the world over under similar circumstances—namely, shooting wind on company time.

The master mechanic borrowed a pipeful from the mine boss, meanwhile relieving himself of his opinion of the war tax on tobacco—a considerable relief judging by the drumfire of expletives with which his remarks were expressed, or rather exploded.

The compressor engineer was oiling up, and as he filled the oil cups on the big flywheel bearings, the master mechanic was reminded of the following story:

"When I was starting out, one of the first jobs I had after I got my license was as night engineer on a big Corliss engine in a flour mill. She was a fine 300-hp. engine, and brand new. Now, in a flour mill, when you start running, there is no closing down without giving the loaders time to clear the chutes. If you do, the wheat backs up, and it takes everybody from the general manager to the janitor to clean her out again.

"Well, when I took the job, the boss explained this and told me that if I closed down without warning, it was the same as asking him for a time check. I had been there about a month and was getting along all right, when it happened that as I was going off shift one morning I met a crowd of the boys going on a picnic given by the bricklayers' or steamfitters' or somebody's union, I have forgotten whose. Anyhow, it meant plenty of free eats and wet goods, and nothing would do but that I should go. Well, I went, intending to get some sleep in the afternoon. Naturally, I never got within a mile of a bed, and barely got back in time to go to work.

"I knew if I ever sat down I would go to sleep, so I made up my mind to walk around all night. I turned my chair upside down and started in. About 3 o'clock, after I had my bite, I commenced feeling better, and was apparently so wideawake that I thought I could venture to sit down awhile. Well, sir, I had no sooner touched the chair, I guess, when I fell asleep.

"It didn't seem like I had closed my eyes a second when I smelled something queer. I jumped up and put my hand on one of the main bearings. Believe me, I didn't keep it there. It nearly burned my fingers off. There happened to be a 5-gal. can of oil near the engine, and I didn't stop for oilers, waste or nothing, but spilled the whole contents over the bearings. She sizzled and fried and sputtered around, but I left her running until the crew upstairs had time to shut down. I figured if I shut her off quick I'd be fired anyhow, and I might just as well be fired burning her a little more.

"Well, I let the bearing cool off a while, cleaned her up and started again in a half hour or so."

"Did it burn the bearing?" asked the mine boss.

"Well, it didn't exactly burn it," answered the master mechanic with a dry smile, "but it sure did irritate it."

River Coal Operations

BY GEORGE D. EVANS

Pottsville, Penn.

TO THE travelers on the trains paralleling the rivers flowing through and from the anthracite coal fields, the washeries operating along these streams are always a source of interest and curiosity. There is an idea prevailing among people not in close touch with the operation of anthracite mines that the coal being recovered by these plants is daily getting away from the operating mines, and the question is often asked why the operators allow such a waste to go on. The fact is that a very small percentage of this coal is being lost at the mines now in operation.

While it is true that a small amount of the steam sizes is lost in the washing of the coal and from the loading chutes, and a very small proportion falls into the ditches in the mines being carried to the sump and thrown out by the pumps, the source of the greatest quantity of this coal lies in the old banks stacked up on the surface in the early days of mining.

As every one familiar with the anthracite industry knows, it is only in recent years that there has been a consistent sale for sizes smaller than pea coal, and fifty years back even pea coal was little used. So in the early days of anthracite mining the smaller coal necessarily was regarded as refuse and was dumped in huge piles on the surface.

With the present great demand for steam sizes, new breakers and washeries are springing up all over the field; and these banks are rapidly being prepared and shipped to market. These washeries and the river operations are helping relieve the present coal shortage.

Many of these old banks lie close to the creeks, and the heavy rains have been (and still are) carrying thousands of tons into the streams. Much of this coal is carried into the rivers and by them to points far beyond the limits of the coal fields. There are operations in the Susquehanna River as far south as Harrisburg, in the Schuylkill at Reading, and the Lehigh below Mauch Chunk.

These deposits of coal and coal dirt in the streams have cost the coal companies thousands of dollars in damage suits brought by the farmers having property along the streams, and have been a source of revenue to the latter in two ways; first, in damages recovered from the coal companies, and second, from royalties now being collected from operations taking coal from the streams flowing through the farms.

In some cases small amounts asked by the farmers for damage to meadow land and cultivated tracts were no doubt justifiable, but as a general thing the amounts demanded and awarded by juries were far in excess of the value of the lands damaged. The writer knows of a case where a thousand dollars damages was asked. Upon investigation it was found that the land owner paid only \$135 for the entire tract, and the narrow strip which was partly covered by coal dirt was swampy land that could not possibly have been cultivated and was almost valueless. The claimant in this case, however, did not have the nerve to take the case into court.

The majority of these river coal operations are worked on a very small scale, producing from 20 to 30 tons a



FIG. 1. DAM, WATERWHEEL AND CONVEYOR LINE OF THE INDIAN RUN COAL CO. WASHERY



FIG. 2. ANOTHER VIEW OF THE WASHERY, SHOWING WATERWHEEL, CONVEYOR LINE AND COAL POCKETS

day; but there are a few turning out 100 tons or more each. Many of them are located some distance from the nearest railroad, and the coal is hauled in wagons and disposed of to local industries without being sized. At others, however, the coal is screened and shipped by rail as barley, rice, buckwheat and pea.

There are various methods used to recover the coal from the creeks and rivers. Where the depth of the water is sufficient to permit the floating of dredges, machinery is installed on a flatboat. This machinery generally consists of a 6- or 8-in. centrifugal pump built especially for dredging and belt-driven by a steam or gasoline engine which also drives a revolving screen and a small set of elevators. The pump lifts water, coal and most anything coming down the river (it is the "most anything" which gives the river miner trouble), and discharges into the screen which revolves partly submerged in the river.

From the screen, the coal is picked up by a set of elevators, and either discharged through another screen for sizing or directly into another flatboat and floated to shore.

The Indian Run Coal Co. has a novel operation on the west branch of the Schuylkill River near Pottsville. This operation is located at an old dam in the river, and the power for driving the machinery is generated by an undershot water wheel.

The breast of the dam is 80 ft. wide and 5 ft. high, and when the stream is normal there is about 3 in. of water going over. The bed of the stream has very little fall and the water is backed up for about a quarter of a mile. The water over this distance is only a few inches deep, so that the dam is filled up with solid matter, fully 75 per cent. of which is coal.

At one side of and from the bottom of the dam is a sluiceway 3 ft. 9 in. wide and 16 ft. long, originally built for the purpose of emptying and cleaning out the dam. This sluiceway is opened and closed by a lift gate. When the washery was built the sluiceway was extended 40 ft. downstream, and the water wheel set

up at the lower end of it, as seen in Fig. 1. The water wheel is 8 ft. in diameter and 3 ft. 6 in. wide. As the water is fed through this channel toward the water wheel, it carries with it all the coal which is coming downstream and at the same time cuts out some of the coal which has been lying in the dam.

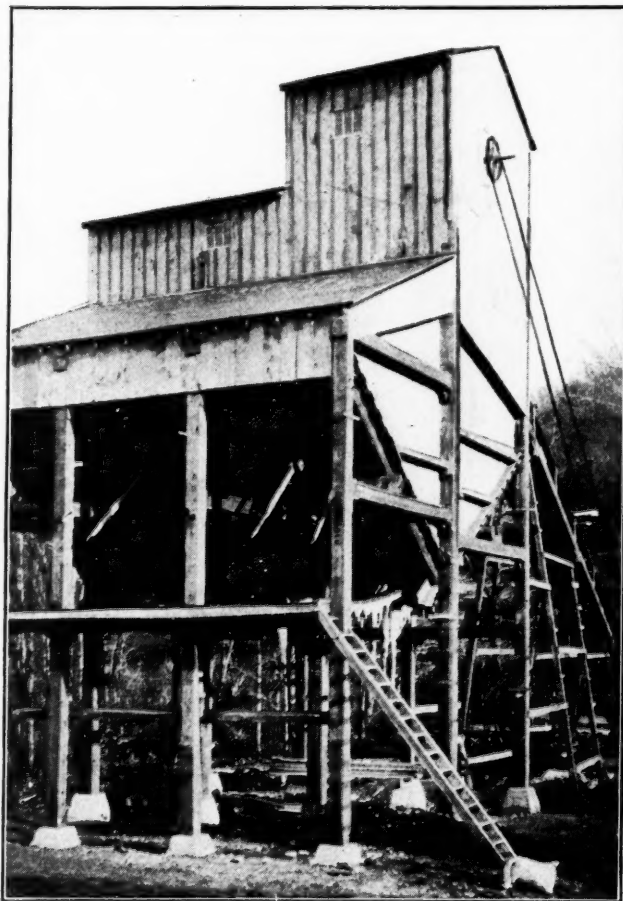


FIG. 3. COAL POCKETS AT THE WASHERY

Naturally, this coal settles to the bottom. In the bottom of the sluiceway, at 16 ft. from the upper end, is a trap through which the coal together with part of the water drops and is carried through a closed trough into a conveyor line. The water going over the top drives the water wheel, which, as stated above, furnishes the power to drive the conveyor line and screen.

The conveyor line is 105 ft., centers on a pitch of 7 in. to the foot with 4 x 10-in. flights, and delivers the coal to a 36-in. revolving screen which separates

it into barley, rice, buckwheat and pea. Any coal larger than pea, of which there is very little, is mixed with the pea. As the coal passes through the screen, it is washed by sprays of fresh water.

The four pockets under the screen each have a capacity of 50 tons, and the loading chutes are built at a height permitting the loading of steel hopper cars. At present the coal is being hauled by wagon to a siding near-by, but the building of a spur under the pockets is contemplated. About 40 tons per day are being shipped at the present time.

Federal Trade Commission Reports on Coke

ON DEC. 14, the Federal Trade Commission met at Washington, D. C., in executive conference with several representatives of the steel industry and with J. L. Repogle of the War Industries Board. The purpose was to discuss steel costs. Dr. Walker, the economist of the commission, made a report on the cost of making beehive and byproduct coke, pig iron and various kinds of steel. The figures in the tabulations presented were those reported by the companies, the commission not having time to send experts to obtain the information for itself from the books of the operating companies. The work of the Federal Trade Commission is limited to the determination of costs. It does not decide prices; that matter is left to the War Industries Board.

Costs for the first six months of the year, and specifically for May, June and July, were obtained by the commission at an earlier date. The purpose of the further investigation was not only to find the more recent costs, but also to determine the trend of costs with the progress of time.

The costs of most of the products varied greatly for the one and the same month. The purpose of the Federal Trade Commission was not merely to discover the lowest or even the average production costs. As Dr. Walker explained on behalf of the commission, the commissioners thought the War Industries Board was not desirous of reducing the volume of the steel industry by a severe restriction on the prices allowed for coke, pig iron or steel. He believed the board would be interested in knowing that 90 per cent. of the production could probably be produced much more cheaply than the maximum figures would show.

The costs, as far as possible, eliminate all inter-company profits and also all items that the commission did not regard as forming a real part of the cost; for instance excess-profits tax or interest on investment. Where these were added in the returns made by the companies reporting, the commission eliminated them. In some cases the general and administrative expense was not added by the companies in their cost sheets. The small companies included it in many cases because they found it easy to figure. Some of the larger companies also supplied it.

The figures tabulated did not include these charges, though a marginal note set forth these additional costs. Dr. Walker, on being questioned by J. V. W. Reynders, chairman of the American Tube and Stamping Co., Bridgeport, Conn., said that he thought the figures in-

cluded charges for the depletion of the coal. He said he, at least, felt safe in asserting that the depletion charges were included in the statements made by the larger companies.

Speaking of beehive coke, he said that out of a tonnage of 2,014,000 odd tons in October, 1,300,000 tons, or about 64 per cent., was produced at \$2.82 per net ton or less, 80 per cent. at \$4.40 or less and 85 per cent. at \$5.11 or less, oven cost alone being considered. This figure represents the conditions in the Connellsville, Pocahontas, Birmingham and other coke regions.

The Connellsville figures, which are more important, than the others, showed that the oven cost of coke varies from \$2.17 to \$5.03. Eighty-five per cent. was produced at and under \$2.82, a much larger percentage being under that figure in the Connellsville region than in the United States as a whole. Ninety per cent. is produced at \$4.58 or under. The War Industries Board put the price of coke at \$6. Possibly it is well here to recall the fact that the oven cost is not the proper selling price of the coke. There are many legitimate items of expense that it does not include.

The figures for Connellsville coke in June and July ran between \$2.14 and \$5.64. Mr. Wooster said that though the low price had risen only 3c. per ton and the high price had fallen 61c. per ton, the average cost of production has risen much more, for only a small amount of coke was produced at the higher figure recorded as the maximum cost during the month of June.

In October 1,369,000 tons of byproduct coke was made by steel and other companies. A little over a million tons, or 79 per cent., had a cost of \$5.68 a net ton or less. The low cost was \$2.21 and the high cost \$9.44. Apparently, in the case of the higher-cost coke, no deduction was made for the byproducts secured. A credit for these should in fairness be allowed. The amount deducted from the cost of some of the coke was \$1.50 per ton. Mr. Wooster explained that the byproduct allowance was an arbitrary figure and was not based on the correct selling value of the byproducts, which would give a much higher credit if used.

Dr. Walker explained that the high price of some of the coke was due to the high price of the coal used. Some coal used for coke was being purchased under old contracts. The price paid for this coal much exceeded the Government price, which only applied to free coal.

The consideration then turned to the question of the price of pig iron, but in order to keep the mind of the reader centered on one subject—coke—the references to

that material are here omitted. One important company producing steel reported the cost of coke used in the manufacture of pig iron in June at \$8.71 per ton of pig iron. In October the cost was \$11.15 per ton of pig iron, the increase being \$2.44 per ton. This was probably due wholly to the increase in the cost of coke per ton at the furnace, which was \$9.19 in October.

A somewhat typical northern company that merchants its pig iron and does not manufacture steel reported the coke cost in July as \$6.19 per ton of pig iron. The figure in October had risen to \$12.40, an increase of no less than \$6.21 per ton of product.

In the case of the southern merchant pig-iron furnaces, Dr. Walker said the largest item of increase in the price arose from the increase in the cost of coke. But the rise was not so marked as in the northern merchant furnaces. The largest company reporting showed that the cost for coke in June was \$5.97 per ton of product. In October it rose to \$7.23, or \$1.26 per ton. Labor had not increased per ton of product; while the price of metal per ton and the cost of net metal per ton had both shown a slight decline between June and October.

So here we have increases in coke of \$2.44 per ton of product at a large steel company's furnaces, an increase of \$6.21 per ton of product at a large northern merchant furnace and an advance of \$1.26 per ton of product at a large southern merchant furnace.

In a recess to prepare figures on blooms and slabs, a discussion took place as to the possibility of buying coke at the Government price of \$6. H. G. Carell, Washington representative of the Semet-Solvay Co., of Syracuse, N. Y., stated that he had sold coke at that price, so he knew positively that some had been bought at that figure. Commissioner Murdock replied that he did not note any of the aggregate figures presented showed that coke had been purchased for that price.

COKE CONTRACTED FOR 1918 AT \$10 A TON

Blauvelt said that the price of coke was set for six-month periods. The June figures were quite reasonable because the contracts for the first half of the year expired only on June 30. Many of these contracts called for a coke price of \$2.50 per ton. He said that the price for coke was due to become higher. It might run \$9 and \$10 per ton of coke during the first half of the year.

Commissioner Davies suggested that this would be because outstanding contracts would prevent the Government price from becoming operative. Mr. Blauvelt said that the outstanding contracts for the present half of this year are below the Government price in many cases. But in the first half of 1918 the high prices mentioned will replace those given. He added that the price of coke in the first half of the coming year would lie between the Government price and the high contract rates which had been agreed on last July, August and early in September before the President set a price, for contracts were made even at these later dates.

Such contracts he told Commissioner Davies run in most cases for a year. They usually expire on June 30, because the purchaser of coke likes to make them at that time. He argues reasonably that warm weather and a full car supply makes the seller disposed to be blue and willing to sell at a low figure. If contracts are made when the weather is cold and when the coke man cannot

fill his orders because of inadequate service or from other reasons, he will then be disposed to ask a high price. This year the seller has his own way. It is a "seller's market" and contracts are made to suit the seller. He prefers, and is able, to make them under such conditions for a full year to close Dec. 31. This year the contracts were made not only in July, but in August and September. Some of these contracts run for only the first half of 1918 and some for the whole year.

HIGH-PRICE COKE IS WASTEFUL OF FUEL

Mr. Blauvelt declared that there had been a great deal of discussion among coke producers as to the legality of the fixing of price. He said that, after a few get hauled up short and find out that the Government means business, there will be a marked improvement. The Government is likely to commandeer a large quantity of coke and sell it at \$6 a ton. Already, when essential industries had wanted coke, the Government had stopped some which was being delivered at \$10 per ton and sent it forward at \$6.

Coke was sold at a higher average price in the second half of 1917 than in the first half, because the second-half contracts were all made at a higher price than the first-half, and then in addition some spot coke had to be bought. In 1918 there will be a large tonnage, perhaps 50 per cent., according to Mr. Blauvelt, sold above Government prices, much of which will command \$9 and \$10 a ton. Most of the contracts for this coal will run for the full year.

However, Mr. Blauvelt believed that practically none of the byproduct coke already sold for 1918 delivery was contracted for at a figure above that provided by the Government. While the price established for coke by the President—namely, \$6 per ton—gives a nice return to the coke producer, it is more profitable in many cases, Mr. Blauvelt says, to sell coal at "established prices" than it is to convert it into coke. These high coal prices have reduced the amount of West Virginia coke shipped to Ashland and Ironton in the Ohio Valley. Commissioner Davies said that, on the other hand, there was more profit in coke than in coal in some sections of the country.

With this Mr. Blauvelt agreed. In the Connellsville district the profit was on coke and not on coal, and in the West Virginia districts on coal and not on coke. With coal at \$2.75 a ton it was more profitable to sell the West Virginia coal than the coke made from it. Mr. Blauvelt said that the coke yield of this particular coal was only 54 per cent. The coal in the coke that he had just mentioned would cost \$5 a ton, and the coking cost would be \$1.25 more. The price of \$6.25, which exceeded the Government price by 25c., would still not provide for contingent reserve.

To coke such fuel in beehive ovens was extremely wasteful of fuel, but byproduct ovens cannot be built fast enough to handle the fuel economically for it takes two years to construct these ovens. Mr. Blauvelt added that no coal that could be economically coked was being sold as coal by the intention of the coke maker. Unfortunately, however, the railroads have been confiscating coal consigned to byproduct ovens, which would normally have been made into coke. Only the other day 3000 tons of coal on its way to Boston to be coked was seized by the railroad.

Coal Mining Institute of America Meets—III

By R. DAWSON HALL

The question box ended with a discussion on mine stoppings, dangers of thick and thin coal and risks attendant on spragging and braking cars. The dinner and the last day's session are here described.

THE institute did not take very kindly to W. L. Affelder's resistless stoppings as a means of limiting explosions in coal mines. It is questionable whether the release of pressure has much effect except at the point of origin. It is probable that an explosion started at a longwall face is less likely to be propagated than when it starts in a room or, worse yet, a heading. It may be harder to start an explosion when a crosscut is handy, but otherwise a crosscut is a trifling provision for release of pressure. The first crosscut, moreover, is always open. If it has failed to do its hoped-for work, will the second crosscut, which is not open but lightly stopped do any better than the first crosscut, which has failed to serve the purpose? It might do so, of course, if the explosion was dying for lack of fuel or expiring in the smothering rock dust that the explosion had raised.

J. W. Paul even questioned whether the light stopping would blow out as readily as Mr. Affelder assumed it would. He asked whether strong stoppings were not more readily destroyed than weak ones. He knew a case where an explosion failed to blow down a wood stopping at the edge of a crosscut. It passed through it and did considerable damage to a concrete stopping in the center of the same crosscut. He said that in an explosion it often happened that the percentage of wood brattices blown out was less than that of concrete brattices.

CAN AN INDESTRUCTIBLE STOPPING BE BUILT?

Sim Reynolds declared that an explosion could not be restricted by stoppings, however strongly constructed, as proved by the Marianna explosion. F. W. Cunningham said that a good center wall with dirt piled clear to the roof on either side would turn the trick, but the dirt must be absolutely roof high or the blast would blow through and knock down the center wall.

H. D. Mason, Jr., said that in Oklahoma it was the custom to put a board stopping in the center of a crosscut and cast rock up against it. On an explosion taking place, the rock is blown out into the roadway where it blocks the roads. Only part of it is thus removed. Some remains, enough to make it impossible, except at much labor, to examine the stopping or to repair it. This condition makes mine recovery after an explosion quite a difficult matter. Question 8 was as follows:

In pillar drawing, where are the greatest risks encountered—in high coal or in low coal? Under a strong roof or a weak roof? By rib-splitting or by slabbing?

One speaker declared that the ideal coal thickness was one in which the miner or mine worker could stand erect without touching the roof. Roof that was lower

was inspected only with effort. The miner was less disposed to examine it. Under the other condition it was at such a level he could hardly avoid giving a glance at it once in a while.

Thomas A. Mather, a mine inspector, said that there was a danger in low coal peculiar to such beds. In order to secure roadways of sufficient height it is necessary to shoot the roof, often with heavy shattering shots, which shots cause the roof to fall later, often unexpectedly. Another member rather regarded low coal as a source of safety. Where the coal is low it is necessary to take down rock, and the rock above the coal is quite usually drawslate; and it is often full of impure coal. Taking this weak member down makes the roadways safer rather than less safe.

As was pointed out, the higher coal in this country has, in general, roof that is less safe than that which is found over thinner coal. This may be purely accidental, but it must be remembered that the shrinkage of the peat from which coal is made brings continued stresses on the material above it. This shrinkage effect would be greater where the coal is thick and less where it is thin. This may be only an imaginary explanation to account for a condition which a wider knowledge might show does not in general exist. However, it is a fact that the Belgian mines, at least in happier times, were the safest in the world and the coal among the thinnest. The last question was:

What conditions should determine whether mine cars should be retarded by brakes or by sprags?

In this question there seemed a stick in pickle for the insurance carriers of workmen's compensation in Pennsylvania. Section 50 of the Coal Mine Inspection Report states that

"Efficient brakes shall be provided on all cars operated on pitch. Cars should be spragged or blocked while loading on rise grades and tie-and-post blocking used on dip or rise-grades that exceed 3 per cent."

John Lane said he was not opposed to brakes, but to bad brakes. He said that whether cars carried brakes or not he noticed that sprags were placed on the top of the load. They were always the last and surest line of defense. William G. Duncan declared there was an



FIG. 1. HERE THREE ACRES OF 6½-FT. COAL HAD 6 TO 12 FT. OF COVER

inherent danger in putting in sprags, which is quite true. Will some one be found to deny that there is any danger in the setting of brakes on a moving trip? Most of us would be more inclined to think the application of brakes a more hazardous operation and even more uncertain in performance. There are dangers, it must be remembered, in failing to brake or sprag a car where braking or spragging is necessary. It is because in some way the cars must be retarded, that the first part of safety rule 50 is promulgated. As for spragging, expert men can do that from a distance. The sprag can be thrown. It is true the brake is "thrown," according to mining parlance, but the expression is quite inaccurate, the brake lever is really pushed over against resistance and not thrown.

As John Lane remarked: "How are you going to use brakes, the mechanism of which must be attached to one end of the car, if you propose, as some are now doing, to dump the car on one trip at one end and on the next trip at the other?"

The institute dinner was held in the large "English Room" of the Fort Pitt Hotel, the first dinner the institute has ever held that was deemed worthy of such large accommodation. Many of the companies having headquarters in Pittsburgh had secured tables. Francis S. Peabody, the main speaker of the evening—need we give him his Governmental title?—arrived late and had to pay at the door 18 months salary—namely \$1.50—before he was suffered to enter, for which extortion the president of the institute made due apologies.

After a brief address from the president acting as toastmaster Mr. Peabody was introduced. He said he went to Washington as Chairman of the Committee on Coal Production. At the time it was believed that the national coal interests should be in charge of someone with a knowledge of coal. But later it has been held that such knowledge is not necessary (*sic*). When the question of guarding explosives from improper use of enemy aliens arose, he was given charge of the board by which the selling of explosives was to be regulated. He supposed this was because he knew nothing about explosives. He had, however, surrounded himself with several men who do, and consequently he hoped that the work of the board would be effectually performed. Reference to his appeal for clean coal has already appeared in an editorial published in the issue of Dec. 15.

C. J. Ramsburg, the vice president of the H. Koppers Co., made an interesting address on the operation of

the Koppers oven, with motion pictures and stereopticon slides showing the method of operation and the capacity and products of the ovens. He said that though coal containing about 18 per cent. of volatile matter was at first regarded as approximately the limit for effective coking in byproduct ovens, now coals containing 33 and 34 per cent. of volatile matter are being coked.

Large quantities of Illinois coal are now being used in byproduct ovens. It is better suited to the heating of residences than for use in blast furnaces as it is somewhat soft. In reply to an inquiry he said that the coal in byproduct ovens is not tamped anywhere in the United States. American coal is somewhat less severe on the life of the oven than European coal, for some of the coal in Europe is salt and because American coal not being washed contains less water. Both salt and water are injurious to oven walls.

He said that the Laclede Gas Works in St. Louis were making a gas in their byproduct ovens having 62 per cent. of the calorific power of natural gas, or 620 B.t.u. per cubic foot. Byproduct coking is making rapid strides. By the middle of next year 35 to 40 per cent.



FIG. 3. A ONE-ACRE COAL STRIPPING WITH 12 TO 20 FT. OF COVER OVER THE COAL

of all the coke produced in the United States will come from byproduct ovens.

David W. Kuhn, the fuel administrator for the Pittsburgh district, then spoke of the fuel problems of his administrative area, the most important fuel center in the world. In conclusion of the interesting session, E. E. Bach, sociological superintendent of the Ellsworth Collieries Co., showed the remarkable moving pictures taken at the Ellsworth collieries illustrating "Safe and Unsafe Practices in Bituminous Mines."

In the morning session of the following day E. C. Drum took the place of D. A. Elkin on the program and discussed "Coal Mining by Stripping." The party who on the day previous had appeared somewhat piqued at the attacks made on his praise of the day-labor system declared himself unable to believe that stripping was as successful as the writer stated, because to judge by the comments of the day previous all day-labor operations were foredoomed to failure, for when a man was paid by the day, all the employer got for the wage paid was the day of the working man; the employee could not be induced to part with any of his precious labor by either threats or cajolery.

Mr. Drum said that stripping work was well adapted to outcrop mining because the box-cut material did not



FIG. 2. ANOTHER VIEW OF STRIPPING IN FIG. 1. THIS SHOWS NEW CREEK BED

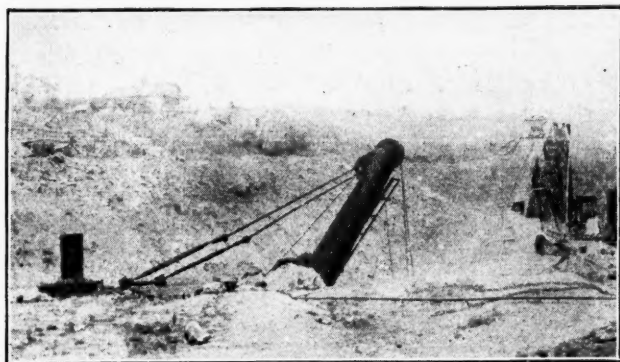


FIG. 4. A VIEW OF THE STRIPPING IN FIG. 3, SHOWING TOP OF SHOVEL AND TIPPLE

have to be handled twice, the dirt was at the first operation placed where it was out of the way. He declared that the electric shovel was now receiving the preference of stripping mine operators.

Dr. Crane declared that contrary to expressed opinion crop coal was not all free from the clinkering quality. It was true that a large amount of the pyrite was leached out of crop coal so that the sulphur content would not cause clinkering, but there were other sources of that offensive characteristic. Where these existed in the unweathered bed, no amount of weathering would rid the bed of them.

Inspector Joseph Knapper said that the Lehigh Valley Coal Co. at Snoeshoe has 35 acres of 4-ft. coal with from 6 to 35 ft. of cover. The cover consists of shale and clay shale, making a roof too "short" for mining. At least 50 per cent. of the coal would be lost in ordinary room-and-pillar mining. The coal is being stripped by contractors who are to receive \$1.50 a ton for their output.

Another central Pennsylvanian said that near Derry a 60-ton shovel with a 2½-yd. bucket was uncovering an 8-ft. seam of coal with from 6 to 20 ft. of cover, which cover averaged about 12 ft. in thickness. The contract price was \$1.25 f.o.b. cars. The bucket is somewhat large for the weight of the shovel. It may have to be changed if the material becomes harder than it is at present.

USES STEAM SHOVEL FOR QUICK DEVELOPMENT

C. L. Clark, of New Alexandria, said he was a believer in shovels for quick development. He used them along the crop, not stripping anywhere over 16 ft. of cover. In 6 weeks a shovel could be producing 1000 tons a day. He used Erie and Bucyrus shovels, with 19-ft. booms, 17-ft. dipper sticks and ¾-yd. dippers. He said that though depreciation was included in his cost sheets, he figured that he could secure his coal at \$1 to \$1.15 a ton.

The question of relative dangers of surface and deep mining being raised, someone was asked to give some information regarding the "mine explosion" at Derry, which occurred at a strip-pit mine and ended in the complete destruction of the shovel.

It appeared from the statement of Inspector Ross that an 80-ton shovel struck an 18-in. gas line (the gas being under a pressure of 75 lb. per sq. in.) and tore a hole 4 in. square in it. The emitted gas came in contact with a light; an explosion occurred and the shovel was burned to the ground.

Another statement of Inspector Ross was of interest.

He said he did not visit strip pits professionally, regarding them as outside his jurisdiction. There were no less than 60 operations in his district employing less than 10 men and therefore not subject to his supervision.

The subject of steam shovels is peculiarly live. Just now there are shovels working at Turtle Creek and Trafford. At Hillside, the Bennett Mining Co., a subsidiary of the Graff Mining Co., is having an acreage stripped by the Robert Grace Contracting Co. At Derry the Yealey Coal Co. has contracted with Harrison & Co., Inc., to strip a large area. This company is using one 60- and one 18-ton shovel. Colonel Bennett is contractor for another stripping at Beatty Station. These are all not far from the main line of the Pennsylvania. At New Lebanon James H. Corbett, a large railroad contractor, has about 200 acres of coal land which he is already stripping extensively. He hopes to have several shovels at work before long. My informant said Mr. Corbett had two working two months ago.

The illustrations show an operation at Belle Vernon where three acres of coal are being stripped of 6 to 12 ft. of cover. The coal is 6½ ft. thick. In order to permit of operation a creek had first to be moved. Other illustrations show a stripping of less than one acre where the cover is from 12 to 20 ft. This approaches the limit for a small shovel, but the contractors evidently hope to make it pay.

GUNITE TO PROTECT MINE ROOF FROM WEATHER

The article on "Protecting Mine Roof with the Cement Gun," by George S. Rice, aroused less discussion. Mr. Rice, from the first, has been a strong advocate of the application of cement by the air spray. He does not claim it as a cure-all for headings which need timbering or brushing at the time of application, but he believes it will prevent the weathering action of the mine atmosphere from making timbering and brushing necessary.

He does not expect to find it proof against destruction by mine explosions. Nothing is. He realizes that the cement gun, like other appliances in the mine and elsewhere, must be used with judgment and technique. He believes that it, like other adjuncts to mine service, has its appropriate place. That it is winning its way, I may add, is shown by the fact that 21 coal firms have 28 cement guns in operation.

B. M. Fast's article on "Electric Storage-Battery Locomotives" received much commendation, both at the meeting and, what is more important, after it. The only discussion of importance related to the requirements of the Bureau of Mines relative to a gas-proof locomotive. These were regarded by some of those present as somewhat too severe. A locomotive with satisfactory gas-proofing could be supplied, but at present the bureau was seeking what the speaker regarded as practically the unattainable.

The discussion on the new revenue act was extremely interesting to the many accountants present. It entered quite thoroughly into the many problems of interpretation that are troubling the accounting and legal professions, but as it passed entirely over my head I shall not attempt to report it.

Joseph Bennett's article on "A New Method of Drawing Ribs in the Pittsburgh District" was not presented. Mr. Bennett preferred to see how the new method succeeded before presenting it. This excessive, but not unusual conservatism is not to be commended.



[Men of the coal industry who find it necessary to get to the national capital on business these days are invited to avail themselves of the facilities afforded by the Washington Bureau of "Coal Age," which is centrally located in the Metropolitan Bank Building. The bureau is in charge of Paul Wooton, who is in a position to be of material assistance to those who have business to transact with Government officials. Have your mail addressed care of "Coal Age," Room 703, Metropolitan Bank Building, Washington, D. C., while at the capital.—Editor.]

New Coal Conservation Scheme

Schools throughout the nation will be dismissed Jan. 30, if the urgent request of the Fuel Administrator is complied with by local authorities. On this day, which has been designated as "tag-your-shovel" day, school children are asked to distribute tags. The movement is in behalf of coal conservation.

The tags, on the face, bear this wording: "Save that shovelful of coal a day for Uncle Sam." On the reverse are these hints on saving coal: (1) Cover furnaces and pipes with asbestos, or other insulation; also weather-strip your windows, or stuff cracks with cotton. (2) Keep your rooms at 68 deg. (the best heat for health). (3) Heat only the rooms you use all the time. (4) Test your ashes by sifting. If you find much good coal, there is something wrong with your heater. See a furnace expert. (5) Write to the maker of your furnace or stove for practical directions for running economically. (6) Save gas and electric light as much as possible—this will save coal for the nation.

Bad Weather Affects Coal Output

Average daily production of coal fell to 1,402,594 tons in the week ended Dec. 15. This unusually low production was caused by a heavy snowfall throughout the principal coal-producing states. The snow, combined with unusual cold weather, interfered with surface operations and made very difficult the delivery of cars by the railroads. Beehive coke production was 538,134 tons, a decline of 12.6 per cent. Anthracite shipments for the week were 31,672 cars, a decline of 22 per cent.

Car shortage was responsible for 56.9 per cent. loss in the full-time output of the mines in the high volatile field of West Virginia, for the week ended Dec. 8. In central Pennsylvania there was a marked increase

in the amount of cars furnished, as was the case also in several of the West Virginia fields.

With final figures available for November production, it proves to have been the month of greatest production, with one exception, in the history of bituminous coal mining in the United States. The November output was 47,747,000 tons. The production in January, 1917, was 41,000 tons greater.

Production during eleven months of 1917 is practically as great as that of the twelve months of 1916. The output of 1916 was 502,519,000 tons. It is expected this year it will exceed 550,000,000 tons.

All of the above figures are taken from the statistics compiled by C. E. Leshner, of the United States Geological Survey. Commenting on the sources from which the increase in the output of 1917 has been drawn, Mr. Leshner says: "If the number of working days be considered, it will be seen that the only district to register marked increases over November, 1916, was Illinois, Indiana and western Kentucky. While western Pennsylvania and Ohio and Michigan held their own, the great producing districts of central Pennsylvania, Maryland, West Virginia (both high and low volatile) and eastern Kentucky appear to have declined slightly. An 8 per cent. increase in output in Illinois, Indiana, and western Kentucky has thus counterbalanced a loss of tonnage in other fields."

Coal Problem Primarily One of Distribution

Statements emanating from several sources charging the railroads with inefficient handling of coal equipment brought forth a protest from Fairfax Harrison, the chairman of the Railroads' War Board. He pointed out that the railroads hauled and delivered from April to November inclusive 175,986 more carloads of anthracite than during the same period in 1916. This is an increase of 15 per cent. over the best record made previously, he declares. During the April-November period of 1917 the railroads hauled 925,691 more cars of bituminous coal than during the corresponding months of 1916. This was an increase of 18 per cent. over the best previous record. In addition, Mr. Harrison said:

The present coal problem is not, as has been represented, altogether a problem of transportation. It is primarily a problem of distribution, for which the public must share the responsibility. The railroads cannot, with their existing facilities, handle a much larger tonnage of coal so long as the present system of distribution prevails. The present system of distribution involves a great amount of cross-hauling of coal, and a resulting large waste of transporta-

tion. The remedy doubtless requires surrender of convenience and old habits, but it is clear. It is to cause coal to be supplied to every section from the mines nearest to that section. No one unacquainted with the facts can conceive the unnecessary long hauls of coal which have grown up under the right of the shipper to route his traffic as he pleases. Whatever may be its justification in normal times, this practice effectively reduces the efficiency of the transportation machine in the time of heaviest traffic ever experienced.

To Supply New England Points

Distribution orders, which will direct shipments from the eastern section of the West Virginia coal fields to tidewater and eastern cities, and reserve for western points the product of the western portion of the state, probably will be issued in the near future by the Fuel Administration. This fact became known following a discussion of the New England situation by Dr. Garfield and Governor Holcomb of Connecticut; Governor Keyes of New Hampshire; Governor McCall of Massachusetts; Governor Graham of Vermont; Senator Gallinger of New Hampshire; Senator Dillingham of Vermont; Senators Brandegee and McLean of Connecticut; Senator Gerry of Rhode Island; Senator Hale of Maine; J. J. Storrow, fuel administrator for New England, and Harold Sewall, representing the Governor of Maine. Despite the strenuous efforts which have been made to keep New England supplied with fuel, the situation continues critical.

Government Takes Over Railroads

As a climax to Dr. Garfield's statement that the transportation tie-up is chiefly responsible for the present coal situation came the news that the Government had taken over all the railroads. This was announced by the President in a proclamation issued last Wednesday night. Every railroad engaged in general transportation, with its appurtenances, including steamship lines, is taken over, and all systems will be operated as one under William G. McAdoo, secretary of the Treasury, as the director general. Mr. McAdoo will also retain the Secretaryship of the Treasury.

The plan, in brief, is to allow the railroads the average net operating income for the three years ended June 30, 1917, and to provide for proper maintenance and replacements during the period of Government operation. To facilitate accounting, the Government operation will be estimated from the first of the year. Stock and bondholders and creditors of the railroads are reassured by the President's proclamation that their interests will be "as scrupulously looked after by the Government as they could be by the directors of the several railway systems."

Garfield Plans To Control Mines

Fuel Administrator Garfield appeared before the Senate committee investigating the coal situation on Dec. 25 and told his questioners that the efforts of the Fuel Administration had been seriously hampered by the congestion of the railroads. Among other things, he explained how, when the war and the approach of winter developed a tremendously increased need for coal, the Fuel Administration took measures to stimulate produc-

tion; how it then found itself confronted with labor troubles, which finally were ironed out, and how finally, having stimulated production and got labor satisfied and working full time, the administration found itself confronted with a transportation problem.

Dr. Garfield said that little relief could be expected until the railroads were put under one management, and that if the war continued for a long time it would be necessary for the Government to take over the mines and regulate the apportionment of fuel.

As a step toward Government control, Dr. Garfield said, he has ordered that when present coal contracts expire new ones shall provide for a limited quantity of coal, to be sold at the Government fixed price on date of delivery and subject to revocation if the Government meantime decides to run the mines.

"The big coal operators of the country have assured me they are ready to deliver their properties the moment the Government asks for them," he said.

Dr. Garfield said he was not familiar with dividends many of the coal companies were paying, but that he believed many operators were making more money than ever before. He regarded good prices as necessary to large production.

Official notice has been received from France that it will not be possible at this time to utilize the proffered assistance of American miners in the rehabilitation of French coal mines retaken from the Germans. The reason given is the fact that only a small portion of the coal-producing area has been regained.



From "The Retail Coalman"
ONE INDUSTRY THAT DARES NOT FAIL

The Labor Situation

General Labor Review

What someone said of the tariff is true also of the labor situation. It is a state issue varying from state to state. It would be unfair perhaps to put the anthracite mine workers at one end of the scale and the Indiana and Michigan mine workers at the other, but the events of the past week seem so to group them.

The Anthracite Conciliation Board is about to consider seriously the question of working nine hours instead of eight. Let us not forget what the concession means. The anthracite operators have just consented to the establishment of the shorter day. This has been heralded as a great victory. Nowhere in the United States has Mitchell Day, which was instituted to commemorate the establishment of the eight-hour day in the bituminous region, been more faithfully observed. The eight-hour day has been the anthracite mine worker's heartfelt aspiration for years.

DIVERGENT PURPOSES IN UNIONIZATION

That aspiration has been realized and now the mine worker seems ready to cast away, during the continuance of the war, what he has gained by so many years of union activity, not because he does not value it but because he realizes how much his labor is needed by the men on the battlefield and by the poor in the cities. Let no one say if he makes the concession that he is without the imagination which only big-hearted men display. Men join a union for two purposes—to make trouble for their employers and to help their fellows, that is, for destructive and from constructive reasons. The quantity of the ingredients of harmfulness and helpfulness varies with different men and at different times.

ANTHRACITE MINER REALIZES HIS OBLIGATION

The anthracite mine workers are showing every day that passes that their motive was one of service to their fellows rather of disservice to the companies which employed them. Whatever may have been true in the past, the outstanding character in the anthracite mine worker is obligation. He stands squarely in line to do his duty by the national cause.

We spoke during the last two weeks in this department about the determination of the Slavs to reduce the attendance at funerals during the war of the members of their fraternal organizations. Now the Russians are following suit. On Dec. 19 the Russian Orthodox Brotherhood at Wilkes-Barre, Penn., notified Fuel Administrator A. C. Campbell that though the by-laws provided a heavy fine for any member who failed to attend the funeral of another member, they had been so amended that now only six pall bearers would be allowed to attend. All other members would be required to continue at their work. This brotherhood has 2700 mine workers and the decision will be a considerable contribution toward an increase in the already large anthracite output.

STRIKE BECAUSE TRAIN IS THREE MINUTES LATE

Against this news put the news from Indiana and Michigan. At a meeting of the Indiana Bituminous Coal Operators' Association, Phil A. Penna, the secretary, said that mine workers at Terre Haute had several times gone home because their train was three minutes late. Speaking of the genus mine worker as found in the Central States, he said: "The coal miner is a most peculiar individual. He must be taught that self isn't all. Think of a bunch of men refusing to go to work because their worktrain was three minutes late. Yet that is just what has happened many times here in Terre Haute.

"What if it had been the movement of a troop train

that had delayed the miners' train three minutes? That would have made no difference. Heaven and earth have to bend to the miner's will. Now these same miners as individuals would not object if a train they rode on to Indianapolis or to Chicago was a few minutes late. But let them become unionized and they think they have power to move the elements."

The mine workers in Michigan are not much better. They have a rule that they will not work if the mine worker's train fails to arrive on time. The train was late at the Banner and Bliss mines on Saturday, Dec. 15. The mine workers said the train was 22 min. late, the railroad declared it was 17 min. In any event the men refused to work. Fuel Administrator Arnold Bontell took up the matter with the Michigan Central R.R. The railroad said that the delay was due to a dispatcher letting a freight ahead of the mine workers' train.

EWEN MINE HAS 100 PER CENT. CAR SUPPLY

Another difference between the anthracite region and the rest of the country lies in car service. There was a defective car supply in the anthracite region at the close of last week as the result of the big storm, but this condition has been quite unusual. To show how fortunate the anthracite region is, it may be recorded that No. 4 mine and the Ewen mine, of the Pennsylvania Coal Co., at Port Griffith, was idle Dec. 20 for the first time in over a year. Shortage of empty cars was the cause of the shutdown.

Compare this with the condition at Lansing, Ohio. The mine of the Lorain Coal and Dock Co. worked only one full day in the week ended Dec. 15. It worked also two hours on another day. The idleness was due to car shortage. Other mines near-by ran only two and three days in that week. The Charleston, W. Va., operators resent the call for no holidays during the festive season. E. B. Siler and S. L. Siler of a local coal concern telegraphed Dr. H. A. Garfield that he was bringing pressure on the wrong parties. The car supply was only 25 per cent. full. Both mine workers and operators were willing to work at any time if cars were provided for loading.

INDIANA MEN WANT TO BE TRANSPORTED TO MINE

The mine workers at Brazil, Ind., are asking for a miners' train on the Otter Creek branch of the Chicago & Eastern Illinois R.R. in order to save them time in reaching and returning from their work. They are willing to pay \$1.50 a month commuting fare, which is 50c. more than is customary. They are taking action through the Rev. E. G. Johnson, the Clay County fuel administrator, and M. H. Johnson, the chairman of the county council of national defense.

In the anthracite region there is a somewhat similar case of inadequate opportunity to reach the mines. The lines of the Schuylkill Railway Co. were tied up last week owing to a strike of motormen and conductors. The electricians at Girardville also went on strike. As a result the men and boys in and about the collieries of the Lehigh Coal and Navigation Co. and the Susquehanna Coal Co. had either to take the early train on the Philadelphia & Reading R.R. or walk. Some stayed at home, as walking in the snow was a heavy drill for the older men. The P. & R. ran a special train on Monday of last week to bring the men to their homes.

The trouble in Ohio about the price of powder was settled by splitting the difference squarely in two. The operators wanted the miners to pay \$2.45; the miners wanted the price set at \$1.75, the old figure. The price ultimately set was \$2.10, 35c. above the price the miners demanded

and 35c. below the price demanded by the operators.

A settlement has also been reached in the district around Jellico, Tenn., a district hitherto weak and in direct charge of international headquarters. The president is Van Bitner, who was formerly president of the Pittsburgh district and held that office till he was forced to resign. The agreement was reached after a conference of four days' duration.

The new contract is said to include recognition of the union, application of the penalty clause and a substantial increase in wages. Alabama also has reached a settlement. The details are set forth in another column.

There has been one unfortunate difference in the anthracite region regarding which it is not safe to express an opinion. The employees at the Colbert colliery of the Shipman Coal Co. after waiting 90 days for the settlement of their demands went on strike, between 700 and 800 men quitting work on Dec. 21. The United Mine Workers wired the Fuel Administrator requesting that a representative be sent to iron out the differences. The mine is located in the western anthracite field near Shamokin, Penn. It is the first mine in that field to strike since the fuel famine has been felt.

The Lehigh and Wilkes-Barre Coal Co. has increased the wages of monthly employees to date from Dec. 1. These increases run up as high as 15 per cent. It is quite generally felt that the wages of the monthly employees of almost all companies have been too slow to rise and have risen too little to accord with living costs and the increasing wage of day workers.

Illinois Has Car Shortage and Strikes

If sufficient cars could be obtained the 31 companies composing the Central Illinois Coal Bureau could produce, at their 49 mines, with their present forces and equipment, 9000 more tons of coal per day than is being secured, according to a statement issued by O. G. Scott, secretary of the bureau. The Central Illinois Bureau is the organization after which various others throughout the country have been patterned. Its territory extends from Lincoln to Centralia. The bureau gathers daily and detailed reports of coal shipments.

Illinois miners are beginning again to exhibit signs of restlessness under steady employment at high wages, and strikes for trivial causes are reported. The 375 men employed at the Woodside mine near Springfield walked out the other day because they did not like the new system of keeping time, on the men going into and out of the mine, that had been installed by the Springfield District Coal Mining Co. The checking system, long in use at other mines, entails the handling by all the miners of cards, which they are required to hang on a board at the bottom of the shaft when they go in and on a board at the top when they come out. The system is intended to enable the company to know at any time what men are in the mine and what men are out of it. This is information to which the company is certainly entitled, and it has a right to require the men to comply with the system, but the mine workers call it espionage and say they will not submit to it. In the absence from Springfield of President Farrington of that district of the United Mine Workers no statement was made by the union officials as to whether the strike was sanctioned or mutinous.

Alabama Miners Approve Peale Contract

After a three-day convention of the United Mine Workers, District No. 20, attended by Vice President Lewis and other officials of the international organization, the agreement proposed by Rembrandt Peale on behalf of the national Fuel Administrator, was adopted. This agreement provides for the establishment of the 8-hour day as long as the war lasts, semi-monthly paydays, submission of complaints of mine workers to operators through committees of employees, arbitration of differences, employment of checkweighmen and recognition of the right of employees to affiliate with the union or any other labor organization without discrimination. It forbids the intimidation and coercion of nonunion employees, and provides

a penalty provision acceptable to the Fuel Administration. The adjustment of wages is postponed until July 1, 1918.

The operators assert that they have never denied the right of employees to become members of the union. They declare that the checkweighmen provision is not a concession as the state mining laws have already provided for the employment of checkweighmen at the mines. They insist that this right has always been afforded the miners. Furthermore, semi-monthly paydays are now observed by all the larger mining companies in the state.

It is not known what action will be taken by the operators relative to ratification or rejection of the agreement, as their attitude has not been made known on some of the complaints covered by the above proposal.

C. F. and I. Men Present Grievances

In the issue of Dec. 22 several of the alleged grievances of the Colorado Fuel and Iron Co. mine workers were enumerated, the report on these grievances by the Colorado Industrial Commission being also recorded.

Another complaint had reference to a car of coal wrongly credited because the car had been improperly checked. The commission arranged that the man be given credit for his car and a half-day's pay for time lost. The Moran complaint says that entrymen are compelled to lay their own iron track and afterward tear it up and lay permanent road without compensation. The commission says the material is furnished by the company convenient to the place of work.

"The miner usually has two short rails 8 ft. long which are laid on the side at the end of the track; when he has advanced a distance of 8 ft. or more, and, when he has made a sufficient farther advance, he takes up the 8-ft. temporary rail and lays and spikes down a standard rail. This work is included in the tonnage rate of pay and no claim has been made to the contrary. Company men lay curves and switches." The commission finds that there is no foundation for this complaint.

The protest about the mining-camp doctors, to the effect that they should be chosen by the men "without any interference from any one or any source," was not approved by the commission, which found that no doctor could please every one and that the present plan had been approved by the employees as part of the Industrial Plan.

The mine workers' plea for an 8-hour day was met with the statement that the only persons working more than 8 hours a day were some company men, such as rope-riders and topmen, who work 9 hours and are paid for that length of service.

The demand for 8 hours from "bank to bank," the commission declares, is "an old demand of the United Mine Workers of America." It adds that, as far as the commission is advised, the "bank to bank" provision is not in force in any coal-mining district. The drivers in the company's mines work 8 hours, but are required in their own time to take their mules in and out of the mine.

The cut of 5c. per ton alleged to have been put in operation at the Fremont mine July 16 was the burden of another complaint. The commission said that the allegation was not proved. The scale is made to accord with the thickness of the bed, which is measured by the superintendent twice a month and payment made accordingly.

The last two grievances relate to discrimination in the renting of houses and to scales which are faulty and improperly placed. The commission found that only fire-bosses, blacksmiths, electricians and other employees who had to be available at all hours were given any preference in the apportionment of houses. Houses were rented in order of application. The commission also declared the weights were tested regularly every two or three months by the company's superintendent of scales. A 2000-lb. weight is kept at each mine.

The commission says that nearly all the demands made, except that for the recognition of the union, were trivial and unimportant, not entitled to be classed as grievances. It ordered, however, that in the Canon District including Fremont, Rockvale and Coal Creek mines the tonnage rate be increased 6c. a ton.

Editorials

STRANGE, indeed, is it that the present year has been principally marked in the coal industry by the advent in the bituminous regions of the small steam shovel for coal-stripping service, mostly along the outcrop. This development is for the most part quite recent. Before that date larger and larger shovels were being used for stripping. Everything pointed to the value of big and ever bigger shovels working at greater and greater depths. The demands of the coal fields had developed a super-shovel larger than the big shovels then in use in the copper and iron fields, and larger than those in use on the Panama Canal or on railroad work.

Now, small shovels are coming in, not merely to pick up the coal after it is stripped, as has always, except in Kansas, been the general practice, but to do the stripping itself. Only recently H. H. Stoek presented an article before the American Institute of Mining Engineers. It was published in the September bulletin of the organization. Though the most authentic of all statements which have yet appeared, it passed over the development of small steam-shovel work in Pennsylvania, then just beginning, and the authorities quoted seemed to doubt whether Pennsylvania was really likely to be a field for steam-shovel operations.

But western and central Pennsylvania are not doubting. They are buying shovels, new and old, and putting them to work. The railroad work of the United States is not brisk just at present, and the shovel equipment, thus rendered inactive, can quite readily be used to advantage at stripping work. Some one-time railroad shovels, in fact, are already at work and they are giving good service. Some are being operated by contractors formerly engaged in railroad work, thus illustrating the fact that the war does not lay men idle but puts their peace experience and equipment to fruitful war uses. Even the "dinky" locomotives will find profitable occupation at this work.

A large shovel does mammoth work. We talk quite glibly of an 8-yd. shovel, forgetting that it means a shovel capable of taking a load measuring 6 ft. in all three dimensions. A fairly tall man could stand up and lie down in a room of that size, and he would not have to touch the walls or the ceiling to do it. Just remember, also, that the material moved is not light, like coal, but a material weighing at least a half more.

* * *

SUCH a shovel will shift 4000 or 5000 cu.yd. per day. Eight bucket loads will fill, if desired, a hopper-bottom coal car of 50 tons capacity. A day's run would fill no less than 82 cars of that size. It is the only shovel to use for a large job and a deep cut. Larger shovels will doubtless yet be built having also even greater length of boom, but still there is a definite place for the smaller shovel where the work is not extensive.

A large shovel is quite costly. When the work is done, the shovel must be sold to a stripper. It is too

big for railroad work, at least as railroad work is now done. It involves also a heavy charge for interest when in use or at rest and when at work a heavy charge for depreciation. The small shovel can be bought second-hand and so can be obtained at once—an important consideration when machinery is hard to obtain. But new or second-hand, just now, a small shovel can be obtained more rapidly than a large one. When the job is finished, there are many places for the shovel—railroad, canal, coke-oven building or cellar-digging work. It may be used also for coal or clay digging in a strip pit where a large shovel prepares the way. It has a general availability.

So the small shovel has its place and will be used. Railroad contractors are already moving their shovels over to the outcrops of the coal in the bituminous regions of Pennsylvania, and they are busy at bigger jobs of steam shoveling than they ever attempted before. There are outcrops almost everywhere that can be stripped. The bituminous region of Pennsylvania is, speaking broadly, the country of the drift mine just as Illinois and eastern Pennsylvania are, in general, lands of the shaft mine. There has always been a marked contrast between Illinois and the bituminous regions of Pennsylvania, and the steam shovel will accentuate that difference.

* * *

THE steam-shovel method of working is the most rapid of methods for procuring tonnage, where the cover is thin. There is no delay in the building of a town, for few men are required, or of a tippie, because the shovel can do the loading. No long drifts and headings have to be constructed. Today the shovel is on the ground and in a couple of weeks coal has already been uncovered. Thereafter the output grows rapidly to a maximum. Of course, if the coal must be prepared, it is a different proposition. If a deep mine is handy, the steam-shovel coal can be taken to the tippie of the mine and there dumped and cleaned. In most cases this is not necessary.

One of the large wastes in the coal fields of the United States, which, however, we all hoped was not irretrievable, has been in the crop coal. Few of the operations hoped to extract coal which had less than 30 ft. of cover, and they often left quite a little coal around the crops which had more cover than 30 ft. This coal with lighter cover can be removed by the shovels, and then the coal under greater thicknesses of overburden can be taken out by underground mining. Strip pits in the past have often given an opportunity whereby mines which had caved could be reopened in an expeditious manner. Every room in this form of mining becomes a drift, and the operation is as profitable as a newly opened mine, provided, of course, the strip pit is near the tippie.

Strip-pit mining is thus a form of fuel conservation. It will save much that was believed to be lost beyond

recovery. Many an old mine will start as a strip pit and develop into a combination mine of value. Many old workings left 50 per cent. of their coal unmined. The strip pit will provide a dozen entry points by which that coal may be secured. But if the crop coal only is recovered in the operation the conservation effected will be phenomenal.

In the State of Pennsylvania the crops were worked for iron ore about the time of the Civil War. The business has gradually become less and less profitable. In fact it is perhaps safe to say that it has ceased to exist. Yet the ore gave excellent satisfaction. It could not compete, however, with the thick and better deposits of the Mesabi and Gogebic regions.

The iron ore is only a few feet below the lower Kittanning coal, and it might be quite feasible to uncover it either at the same time as the coal or by an entirely separate operation. If Pennsylvania were producing a larger quantity of iron ore, that industry might further tax the labor supply of the state; but it might also conceivably ease the railroad transportation problem in a marked degree.

Inadequate Movement of Coke

THERE is something radically wrong in the slowness with which Connellsville coke is now being moved. The Government and railroads either fail to comprehend the needs of the war or lack the coordination necessary to produce the desired results.

Everyone seems to realize that the maximum production of iron and steel possible should be attained. No one can explain how that is to be secured if the pig-iron output is curtailed. That output averaged during the first ten months of this year at least 5 per cent. below the capacity of the existing blast furnaces. During the month of December the output has fallen 10 per cent. or more below capacity. These losses in output have been entirely due to an insufficiency of Connellsville coke.

The production of steel depends entirely on the production of pig iron, for all reserve stocks of iron existing at the beginning of the year have been exhausted; and the steel works are operating only as they are supplied with pig iron.

The blast furnaces that depend on the Connellsville region for their supply could without much difficulty be furnished with all the fuel they need if the effort to supply the cars were taken seriously in hand by some transportation authority. The Connellsville coke shipments as shown by the weekly statistics of the *Connellsville Courier* averaged 421,000 tons a week during the first 49 weeks of last year, and as a result the tributary blast furnaces were well supplied.

But during the first nine months of the current year the shipments averaged only 354,000 tons a week. In the past six weeks the average has still further dropped to 302,000 tons. It is true that owing to the completion of additional byproduct ovens the blast furnaces do not require as much coke from Connellsville as they did formerly. While there are now more blast furnaces in the Pittsburgh region than ever before, the capacity of the byproduct coke ovens has increased so rapidly that the new blast furnace capacity is more than taken care of by the new byproduct ovens.

Instead of being 121,000 tons short, therefore, about 75,000 tons more coke from Connellsville each week

would enable the blast furnaces to be operated at capacity. The tonnage per year would then be 42,000,000 tons instead of averaging not over 39,000,000 tons as it does just at present. The railroads would even then be moving 10 per cent. less Connellsville coke than in 1916.

The movement of 75,000 tons of coke a week is a mere bagatelle. It amounts to 3,900,000 tons a year, or one-half of one per cent. of the amount of coal that is being moved. Of course, coal is an essential to win the war, but surely not all the coal now being produced is being used to further that end. All steel is essential, and steel production is materially restricted because the coke is not moved in necessary volume. Surely some of the coal production which is wasted on nonessential industry could be sidetracked to give the steel plants an opportunity to work at full capacity.

Assuming that the average distance to be traversed by the 75,000 tons of coke a week is 133 miles, the annual movement would be 10,000,000 ton-miles, and that is only one-eighth of one per cent. of the ton-mileage that the railroads claim they have attained in the five months from April to August, both months included. Since then the facilities of the roads east of Chicago have been pooled, one of the objects to be accomplished being the transfer of rolling stock to the divisions that need it most. Something has obviously been wrong, for if steel is as essential as claimed, this little transfer of equipment ought to have been made.

Government Takes Over Railroads

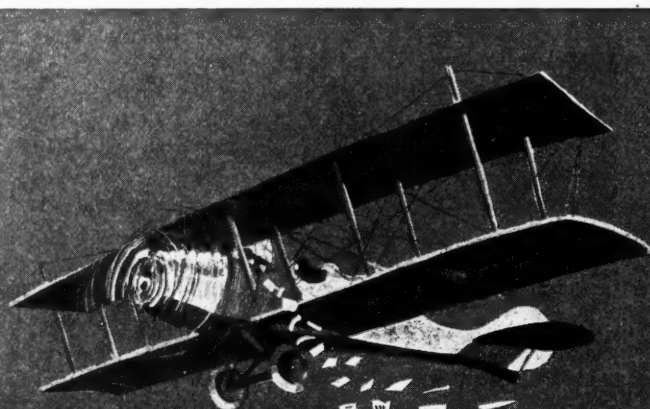
WHEN the Government does something so subversive of all past practice as taking over the railroads it is to be congratulated if the spirit in which it is done is suited to the conditions which call forth such a revolution. President Wilson's remarks when issuing his proclamation reflect no little credit on his statesmanship.

He shows that the failure of the railroads to do what has been desired of them has been due to the fact that they have not been allowed to pool their interests and arrange traffic to suit facilities. He recognizes that the necessary change cannot be made so long as the unification of railroad interests remains incomplete.

Some systems will probably have to be operated at a considerable loss in order that others may be managed efficiently. It is noticeable that the President does not lay claim to any particular virtue in Government management. With everyone harassed by the unfortunate failures in Governmental departments, with a feeling widely current that the railroads have failed because they were badly regulated by Government agencies, it was prudent and right for the President to lay stress on the way in which the Government might reasonably hope to better conditions.

With McAdoo at the head of affairs and with President Wilson disposed to see the railroad situation fairly, there is no reason why the management of railroads under Government auspices for the duration of the war should not prove successful especially as it appears that the management of the properties will still be kept in the hands of the present railroad chiefs. A few should and will be weeded out and Mr. McAdoo cannot do it too soon.

Mr. Mine Official, You are buying New Year's Cards to send to your friends. Here is a poster enabling you to send a Greeting to your employees; if it pleases you, cut off the part below, sign it, and post it.



A Word To You

WE EXTEND TO ALL OUR EMPLOYEES the heartiest greetings of the season and trust that the coming year 1918 will bring them every good fortune.

SOME of these good things—safety and health—are partly dependent on our own efforts. Steady work must, unfortunately, depend largely on the car supply; and this we can aid in securing by promptly loading what cars are given to us as soon as they arrive on the siding.

OUR STANDING as citizens can be raised by the purchase of Liberty Bonds and War Savings Certificates. No one should be satisfied with himself unless he is doing something to assist Uncle Sam in the war by the purchase of these Government securities. All of us are called to restrict our purchases of needless and harmful things so that we can release for the war the people who are making them and the raw materials out of which the things are made. Moreover, by this saving we shall be enabled to lend our money to the Government.

Signed,

Dec. 29, 1917.

LIBERTY
BONDS

W.S.S.

W.S.S.
WAR SAVING STAMPS
LIBERTY
BONDS

LIBERTY
BONDS

LIBERTY
BONDS

SOME INTERVIEWS

This One with Myself

For two solid weeks I have been traveling about the coal-mining camps of our state. Not a day has passed during that time in which I have not seen in one or more of the daily newspapers an account of a threatened coal famine in some near-by city, often almost within a stone's throw of the mine at which I happened to be at the time. During that two weeks I have not visited a camp where more coal could not have been loaded if the miners had been willing to bestir themselves. It is true that railroad service was never what it should have been, and that several of the mines had their outputs considerably cut down by railroad-car shortage, but even then the outputs obtained could have been improved upon if the miners had so willed.

Isn't that an awful reflection on the leadership of the men who are in charge of those mines? I think it is.

All men, no matter how ignorant, are endowed with imagination, and they can be made to work their finger nails off if only the proper appeal is made to this imagination. Labor leaders recognize this and fire the minds of their followers by outlining great programs for them; foremen recognize this when they start one shift working against another shift to beat a record; and superintendents do the same thing in starting competitions between mines.

Now, why can't someone connected with the coal-mining industry suggest a plan that will lead our miners to enter into competition with one another, to see who can do the most toward overcoming the suffering and troubles caused by the present coal shortage.

Charlie Schwab tells a story about getting a certain Carnegie mill, which had been making an unsatisfactory showing, into the record-breaking class by simply chalking on the floor of the furnace the number of heats that the day shift had made and putting the mark in a place where the night shift would be sure to see it. They did see it, and wanted to know what it meant. When they were told, they started in to beat it—and they succeeded; of course, the following day the day turn did still better, and so it ran, first one ahead and then the other, until the mill was changed from the poorest producer to the best producer.

If men can be inspired to work wonders with a mill simply by putting them in competition with one another for a record, what could they not be led to accomplish if they would enter into competition to eliminate the cause of intense suffering in our cities, to say nothing of eliminating one of the most serious obstacles to victory now staring the Allies in the face. Considering the possibilities, it does not require the widest stretching of one's imagination to picture a mine where all the employees, from superintendent down to trapper-boy, would have become so enthused over the work undertaken as to make necessary the enforcement of maximum working hours to prevent the mine mules from being worked to death.

If men will deny themselves the necessities of life to pay union dues in a union that promises as the

supreme reward shorter working hours and a say in the management, would those same men balk at a little extra exertion when the future history of their country and possibly the future history of the entire human race might be influenced by the effort?

The Red Cross appeal, the boy scout appeal and the Y. M. C. A. appeal have all brought results in our mining camps; then why can't the appeal to patriotism be made to hit the mark?

Getting a Little Safer Year by Year

The summary statement of fatalities in the mineral industry of the United States for the year 1916 shows a gratifying decrease, according to statistics compiled by Albert H. Fay, of the Bureau of Mines, Department of the Interior. These figures represent decreases in coal mines, metal mines, metallurgical works and by-product coke-oven works as compared with the previous year.

The number of men employed in 1916 was 1,128,257 as compared with 1,067,929 in 1915, and the total number of fatalities in 1916 was 3224 as compared with 3076 in the previous year. The principal increase in men employed was in the metal mines and metallurgical works, while there was a slight decrease in the coal mines and quarries.

The fatality rate per 1000 men employed for the industry as a whole is 2.86 as compared with 2.88 in 1915, while the same figure equated to a 300-day basis is 3.37 as compared with 3.74 for 1915. The principal decreases, based on the 300-day basis, are as follows: Coal mines in 1916, 3.93 per 1000 300-day workers as compared with 4.44 in 1915; metal mines, 3.62 as compared with 3.89; ore-dressing plants, 1.41 as compared with 1.57; smelters, excluding iron blast furnaces, 0.73 as compared with 1.05; byproduct coke ovens, 1.35 as compared with 1.75. Quarries and beehive coke ovens show slight increases.

NUMBER OF MEN EMPLOYED AND NUMBER KILLED IN THE MINERAL INDUSTRY OF THE UNITED STATES DURING 1916

	Number Men Employed	Equivalent Number 300-Day Workers	Number Killed	Fatality Rate Per 1,000 Em- ployed	Per 1000 300-Day Workers
Mines and Quarries:					
Coal mines	720,971	565,766	2,226	3.09	3.93
Metal mines	204,685	192,455	697	3.41	3.62
Quarries (inside)	60,944	49,077	114	1.87	2.32
Quarries (outside)*	29,853	27,380	59	1.98	2.15
Metallurgical Works:					
Ore-dressing plants	22,365	23,470	33	1.48	1.41
Smelters	43,829	49,363	36	0.82	0.73
Auxiliary works†	14,007	15,763	14	1.00	0.89
Coke Ovens:					
Beehive	18,570	18,591	24	1.29	1.29
Byproduct	13,033	15,528	21	1.61	1.35
Total 1916	1,128,257	957,393	3,224	2.86	3.37
Total 1915	1,067,929	822,827	3,076	2.88	3.74

* Includes rock crushers, rock-dressing plants, etc.
† Includes shops, yards, construction, etc.

COMING MEETINGS

American Wood Preservers Association will hold its annual meeting Jan. 22-24, 1918, at Chicago, Ill. Secretary, F. I. Angier, Baltimore, Md.

United Mine Workers of America will convene at Indianapolis, Ind., Jan. 15, 1918. Secretary, William Green, Merchants National Bank Building, Indianapolis, Ind.

Discussion by Readers

Protective War Measures

Letter No. 1—After reading one or more of the editorials in recent issues of *Coal Age*, I fell to thinking over some of the conditions that have developed lately, respecting the safeguarding of life and property in coal mining.

Since the declaration of war by the United States against Austria, one naturally thinks of the possible danger that might arise from the presence of the large number of Austrian miners employed in our coal mines. It goes without saying that these men are fairly well skilled in the different kinds of work required in mines.

I believe it is a fact that they are particularly skillful in the handling of explosives, and this fact has led me to wonder what protective measures, if any, are desirable to safeguard lives and property against the malicious acts that might be aroused in the heart of some Austrian miner, as the result of the attitude of our Government toward his native country.

LOYALTY OF FOREIGN MINERS PROVEN

Reviewing the situation carefully, I believe that the great bulk of Austrian miners are loyal to this country and are, or will be, patriotic citizens devoted to its best interests and welfare. It is a fact that organizations composed of foreign labor have, in more ways than one, proved their loyalty to the United States. For instance, while formerly a member who failed to attend a funeral of one of his comrades was liable to exclusion from the organization on that account, the order has recently been made forbidding the attendance of more than a selected number at the funeral of a member.

The purpose of this order, promulgated by many organizations of foreigners in this country, is plainly in accord with the desire of the Government that every miner shall be regularly in his place, each day, and do his best to increase the output of the mines to meet the present demand for coal, which will enable this country to win the war.

It is not my desire to anticipate trouble. My purpose is rather to draw out expressions of loyalty respecting the great classes of foreign labor now employed in the mine and to make them, if possible, more loyal to the country of their adoption. While conditions may arise that would tend to arouse suspicion, at times, since it is only reasonable to suppose that all men have a lingering love for the land of their nativity, the fact that our foreign miners have enjoyed the protection of the Stars and Stripes, in years of peace, should make them appreciate their debt to this country.

In considering what is necessary for the protection of our mines, the truth of the old adage comes home that "to be forewarned is to be forearmed." The safety of mining interests everywhere can only be assured by the careful supervision of our mines, on the

part of both mine officials and miners. No loyal miner will permit to go unchallenged any suspicious act observed on the part of a fellow worker.

In this fact there is greater assurance of protection and safety than in the more severe measures that might be expected to follow the conscription of labor and of the mines by the Government. I have implicit faith in the power of our Government to protect its citizens in every emergency that may present itself, and it cannot be said with certainty, at present, that conscription by the Government will not be necessary. I shall be glad to hear from others along this line, as I believe that this is an important question in the protection of lives and property, in mining.

LUMEN.

W. Leisenring, Penn.

Standardize the Mine Foreman

Letter No. 1—Having served as mine foreman in three principal coal-producing states and, as engineer, for one of the largest corporations engaged in mining coal, the work has made me familiar with the management of a hundred different mines. It has given me such an insight into the underground management of mines as leads me to make a few suggestions concerning the conditions that surround the average mine foreman.

After reading, with much interest, the recent letters in *Coal Age* referring to the wages or salary paid mine foremen, I feel that this is a delicate question and one that has not received the earnest consideration that will insure a fair judgment. In what follows I desire to give a candid analysis of the situation as I have observed it in coal mines, having regard to the natural development and ambition of the man who is truly competent to fill this position.

AMBITIOUS, COMPETENT FOREMEN OFTEN DISHEARTENED

To begin, then, the possessor of a certificate of competency to act as mine foreman, which has caused him much effort and hard study to obtain, may be assumed to be an ambitious man. Such a one is naturally anxious to show his ability by the results he strives to accomplish. In making application for the position of foreman, he is not prone to ask many questions concerning salary. He believes that the results he expects to show will, in a short time, regulate the pay he can demand.

After a few months of successful endeavor in his new position, this ambitious hard worker finds, much to his dismay, that credit for the increased output of coal and reductions made in the monthly cost-sheet is given to the superintendent, his superior in office. From the nature of the case, however, there is nothing he can do to retrieve his fortune and gain for himself the recognition he rightly deserves. Is it any wonder the man is disheartened?

It is the indifferent worker—the man of no initiative—that will not be thoroughly discouraged when robbed in this manner of the just fruits of his toil. The man who is worth while—the man who can produce the goods when occasion demands—feels the injury done him. He is discouraged and his enthusiasm falls to absolute zero when, normally, it would range anywhere from summer heat to boiling temperature.

The foreman who, under such treatment, retains his position degenerates to an ordinary laborer. Instead of continuing to plan new ways and methods of greatly increasing the production of the mine and reducing the cost of operation, he no longer exerts himself outside of the discharge of his regular duties as foreman. He carries out with scrupulous care the orders of his superintendent, making no suggestions of improvements or changes for the better. In other words he becomes a dependent, for which the company cannot afford to pay more than an ordinary salary that any second-rate man could earn.

EFFECT OF A DISCOURAGED FOREMAN

Other men, equally competent and ambitious, suffering under such treatment, are rendered grouchy, peevish and fault-finding, and this spirit is passed on to the men in their charge for whom they have no word of encouragement. From my observation, this is the characteristic of more than half of the foremen in our mines today.

No argument is needed to prove that loss of spirit and lack of enthusiasm on the part of the man in charge are the direct cause of inefficiency in the operations undertaken. Let me ask, What is the solution of these difficulties? We cannot expect to overcome the natural tendencies of human nature, which are so manifest in many superintendents and other mine officials; namely, to take to themselves credit that rightly belongs to the under man.

The truth is that the position a mine foreman holds is not generally regarded as of the importance it should merit. In other words, the position needs to be raised to a higher standard, in the consideration of the management. The recent Pennsylvania legislation, authorizing the employment of uncertified men as mine foremen in the mines of that state, is evidence of the low estimation in which the position of mine foreman is held by many mine operators.

STANDARD OF COMPETENCY IN PENNSYLVANIA

In Pennsylvania, the mining law, as revised, provides that any man who, in the judgment of the operator, is "equally competent" with the holder of a certificate can be employed as foreman. According to the varying judgment of coal operators, this law makes possible the employment in this position of any man who has the disposition to follow the orders of his superintendent. Too often the latter is held responsible for the operation of the mine, as far as the company is concerned, while the law will hold the mine foreman responsible for the results that follow. This is a sad state of affairs and the sooner it is remedied the better it will be for the employer of men, as he is the bigger loser.

Any coal operator will agree that it is not profitable to employ a dissatisfied man whether he be a foreman, a fireboss or a dayman performing ordinary

labor in the mine. If this is true, it follows that when a man concludes that his services are not appreciated and, as a result, loses his "pep" and "push," he ceases to be an efficient employee. To avoid this condition, all positions in the mine, from trapper-boy to foreman, should be suitably standardized and the men holding them credited with the results they accomplish.

Observation leads me to conclude that, in respect to the position of mine foreman, there is a general lack of confidence in the capability of men filling this position. The position is quite generally underestimated as to its value in the successful operation of the mine.

TRUE STANDARD OF MINE FOREMANSHIP

In my opinion, the competent mine foreman fills a niche equal in importance to that occupied by the superintendent. Indeed, there is much in the character of the work in the foremen's charge that calls for a man of even greater ability than is required by the work of the superintendent. When that is the case, as it is in many large mines, the ability of the foreman should be recognized by a substantial reward in good American currency. This would enhance the dignity of his position and draw to the standard men of required ability.

The state examination of candidates for mine foremanship does not test a man's business ability, which is the element mostly needed in the successful management of a mine. My experience is that men in charge of underground operations should be men who are capable of estimating costs, and this requires business ability in addition to practical mining experience. A man having such ability will soon gain the confidence of the management and raise the standard of the position to a plane that the uncertified man cannot reach.

South Brownsville, Penn.

G. E. DAUGHERTY.

Surveying and Mapping

Letter No. 1—I read with interest the article entitled "Surveying and Mapping," by W. L. Owens, *Coal Age*, Dec. 8, p. 960. Since it has been my custom, in plotting mine notes, to follow a somewhat different course of procedure than that described by Mr. Owens, it may be of interest to draftsmen and others to outline my method briefly.

In his article, Mr. Owens emphasizes the importance of "continuous station numbers," which he claims avoids the possibility of any duplication of numbers and makes it easy for one unacquainted with the mine to locate himself, by comparing a station number found marked on the rib of the entry with the blueprint which he carries. In my own experience the stations are always numbered in such a way that the number indicates its distance from the starting point. This method, I believe, possesses an advantage over that described by Mr. Owens. I do not recall an instance where two stations were confused by reason of bearing the same number.

In my system the chainman selects a suitable place in the roof of the entry for his spad. This being done and the point being located, its distance from the last station is carefully measured. Suppose, for example, the measurement taken is 122.5 ft. If the number of the last station is 3 + 10.2, that of the new station

will be $4 + 32.7$, and this number is marked on the rib in white lead.

The chief advantage, in the use of this system, is that the difference between any two station numbers, on the same entry, gives the distance such stations are apart. Again, since the levels are taken by us every hundred feet and not necessarily at the cross-cuts, as is often done, the difference of two consecutive levels shows the entry grade, at all points along the road.

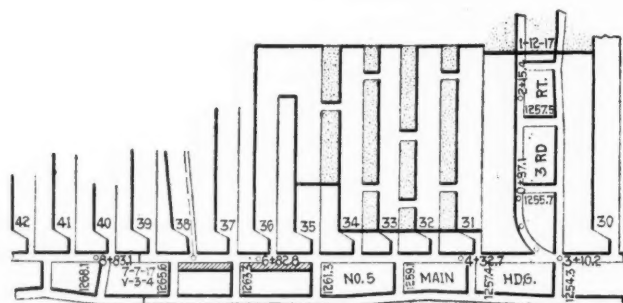
While it is true that two stations, on different entries, may possibly bear the same mark, the fact that they are on different entries is sufficient to show their correct location on the blueprint, and no confusion need arise by reason of the sameness of the number of such stations.

STATION NUMBERS SHOULD INDICATE DISTANCES

I remember on one occasion I happened to be in the office of a large company when some distances were wanted along the main haulage road of one of their mines. Unfortunately, the mine books were out in the field and no duplicate record was in the office. The stations were numbered continuously on the map, after the manner described by Mr. Owens. To obtain the information desired, therefore, it was necessary to refer to the traverse sheets and add together the distances between the several intervening stations.

I could not help thinking how much simpler it would have been to obtain the required distance if the stations had been numbered to indicate their distance from a given starting point, as I have described. It would only have been necessary, in that case, to subtract the lesser station number from the greater, in order to obtain the distance between the two stations, however far apart they might be separated. Both of these systems are used extensively, however, and mine transitmen do not often wish to change from their first love.

In the accompanying sketch I have illustrated the manner in which I am accustomed to plot the field notes



PLOTTING NOTES OF SURVEY ON MINE MAP

of a survey. In the article to which I have referred, Mr. Owens has advocated freehand drawing as being the only method of showing accurately a true rib line. For a number of years, I have used the ruling pen for outlining the mine workings on a map, except where there are numerous irregularities and then, undoubtedly, freehand work is an advantage.

The use of the ruling pen, to my mind, makes a better appearing map and represents the workings as accurately, if not more so, than the other method. Some maps that I have examined and which were executed in freehand were sorry-looking affairs, and I question if

they represented any more closely the actual conditions in the workings than would have been shown by a ruled line, provided the underground work had been properly conducted.

In the accompanying figure hatching is used to show where the heading is gobbled. For this purpose, a 45-deg. triangle is used. The date of the survey and thickness of the coal are inscribed on each heading, at the time of extending the survey on the map. It has been my custom to use black ink for stations and for outlining the workings, while the levels are written in red ink.

For each survey, I use a different water color to tint the area covered since the last survey. This has been found to be a big help when a certain area of extraction is to be calculated from the map, or the results of a particular survey are desired. For coloring the mine map tracings, I have used a crayon, although I am not fond of the idea, as it rubs off easily and smears the map. On tracings of new workings, I prefer to use a heavy ink line around the worked-out portions and mark the date of the survey along the edge of the line.

Last, but not least, I have found it of advantage after the mine notes are plotted, to ink in all the penciled notes in the heading, room and level books. This gives a record of the survey that will last as long as the books. This has the advantage that the notes of the new survey are quickly found when needed for reference in the office, as the pencil notes stand out conspicuously from the inked notes of previous surveys. With others, I shall be glad to read of different methods of keeping notes and plotting them, in coal-mining practice.

PHILIP A. ARNOLD, Chief Draftsman,
St. Marys, Penn. Shawmut Mining Co.

Shaft vs. Slope Opening

Letter No. 3—Referring to the inquiry of Thomas Harris, regarding the choice between a shaft or slope opening, *Coal Age*, Sept. 29, p. 551, it is evident to any practical miner that sufficient data have not been given to afford an intelligent answer to this question. Mr. Harris states that the seam lies at a depth of 118 ft. below the surface and is practically level. Although he does not so state, it may be assumed that the surface also is level, which would afford a constant depth of cover over the entire seam.

Before this question can be answered, except in a general way, it will be necessary to know the nature of the strata overlying the seam, the shape and extent of the property, amount of water to be encountered, thickness of seam, the desired output or tonnage and the shipping facilities.

However, assuming a level surface and taking it for granted that the usual difficulties in opening a mine in a new field are to be encountered here, it is my opinion that a shaft opening is better adapted to meet the conditions than a slope. Not knowing anything to the contrary, it may be assumed that the surface is wet and composed of quicksand or sandy or blue clay for a depth of 18 or 20 ft. below the surface, since this is quite usual in flat land. Sinking and supporting a slope through such strata would be a more or less difficult task and increase the cost of operation.

Again, unless the property covers a considerable area, a slope opening can hardly be advised, owing to its length. It is true that a shorter slope could be sunk by increasing the grade, but this can hardly be recommended if the coal is to be hauled to the surface in mine cars. Sinking on an inclination of 15 deg. or, say a 27 per cent. grade, would require a slope $118 \div 0.27 = 437$ ft. in length, to reach the coal.

I would suggest that Mr. Harris submit this question to a capable engineer, giving him all the information that is required to make a reliable estimate of the cost of sinking both a shaft and a slope. This would enable him to make a fair comparison of the first cost. He must then make a comparative estimate of the cost and efficiency of operation with these two kinds of openings.

ARGUES IN FAVOR OF SHAFT OPENING

Before closing, permit me to refer to the letter by "Kappa," Nov. 3, p. 775, in which he states, "It may happen that a slope opening will present advantages, in the operation of the mine, that will far offset the somewhat greater first cost of the slope as compared with a shaft." Again, he states that "the sinking of a shaft is generally more difficult than the driving of a slope." How this writer arrives at these conclusions without having at hand specific data that would recommend them is more than I can understand.

One of the reasons given by the same writer, for preferring a slope in place of a shaft opening, is amusing. He states, "A trip of cars arriving at the bottom of a slope can be hoisted at once to the tippie, without any delay caused by having to uncouple the cars and handle them separately," adding that "the motorman can attend to coupling the trip to the slope rope."

Why did not this writer suggest further that the slope engineer could also take care of the tippie and change the railroad cars under the chute. However, in all sincerity, I would ask, What kind of a coal mine did this writer have in mind when he made these suggestions? In my opinion, assuming a level surface, and judging from the data given, the argument is all in favor of a shaft opening, in this case. AJAX.

Wilkes-Barre, Penn.

Bossing and Being Bossed

Letter No. 3—Kindly permit me to add a few words to the discussion of this subject growing out of the Foreword of *Coal Age*, Aug. 4, entitled "Your Boss." The purpose of the Foreword, I take it, was to guide the would-be boss to the goal of his ambitions. In this regard volumes could be written, but I will only dwell on a few points that seem to be worthy of special notice and comment.

Someone has alluded to the favoritism frequently shown to fellow members of lodges, church organizations or other societies, by a superintendent in making his appointments and in the promotion of mine workers. In my opinion the days of isms are past, and lodgism, especially, has no dominating influence in coal mining. Competition and efficiency have demanded an altogether changed industrial policy, and the choice now falls on the man who can "deliver the goods." The would-be boss must prove his capacity for bossing before he can

gain the position and, afterward, he must prove his capability if he is to retain his ascendancy.

It is possible that, in a few rare cases, a fellow lodge member may be pushed forward into a position that makes no particular demand upon the man. Also, there are occasional instances where an efficient person is favored by reason of his membership in the same lodge with the superintendent; but the latter official will generally regard his own reputation too highly to run any chances along this line. Coal mining, today, is being built more on the principle of efficiency and fair dealing than ever before.

Speaking of promotion, the would-be boss among mine workers is being closely watched. His good points and his shortcomings are given equal consideration. He is, as it were, "weighed in the balance," since an important feature of the present boss or superintendent is to discover rightly the man fitted for bossing.

In a sense the up-to-date coal mine of today is a training school for future bosses, and the inclination in mine management is to base the choice upon fitness, justice and the individual familiarity of a candidate with local conditions. This is combined with a proper appreciation of the worker's service and loyalty to company interests. I believe that this policy is becoming quite universal and is practiced wherever conditions make it practicable.

GOING OUTSIDE FOR A GOOD BOSS

It is true that, at times, circumstances make it necessary to go outside of the organization to obtain the man fitted for the place. It is with great reluctance, generally, that a company will adopt such a policy, which is done only as a last resort. It is apt to cause ill feeling among the old employees who are likely to misunderstand the motive that prompted the company to take such a step. It may be that the man next in line for promotion has not acquired the habit of being bossed himself, which is the most essential quality of a good boss.

Many qualities go to make up the successful boss. Good humor and patience are excellent qualities when they go hand in hand with the faculty of handling men. Ill-humor, impatience and a fretful turn of mind, or a disposition to worry instead of accepting a situation with a calm determination, are qualities that handicap a boss, whose state of mind is quickly imparted to the workers under him. "What cannot be helped must be endured" is a good motto if a man would avoid worry.

RESPONSIBILITIES OF BOSSING

Besides the qualities just mentioned and the spirit of loyalty and devotion to the work in charge, an important requirement in the character of a boss is initiative. He must have some conception of the responsibilities of the position. A boss cannot assume the attitude often observed in other employees, who are prone to remark, "I am not paid for doing that."

Such an attitude on the part of a worker should disqualify him for a higher position, as the man to be placed in charge of others is paid for doing whatever is necessary to expedite the work. It is a great relief to a boss when his men manifest a disposition not only to do what they are told, but whatever they

find is needed to complete the job. In this way a man shows that he appreciates the responsibilities of the boss.

Let me say, in closing, recommendations from lodges or religious societies do little to commend a man for a position as boss. Employers of men are more interested in the caliber or type of man who lives and acts on the motto, "God helps those who help themselves."

Thomas, W. Va.

W. H. NOONE.

Qualified Mine Foremen

Letter No. 16—The letters relating to the qualifications of mine foremen have expressed many different opinions and, for the most part, have proved very interesting. Being a mine foreman myself, I have followed all that has been said in these letters and in other articles that have appeared in *Coal Age*, dealing with this subject.

Briefly stated, the essential qualities of a successful mine foreman are, I would say, the possession of a theoretical and practical knowledge of mining, business ability, an honest and truthful character and, last but not least, the man must be a hustler. Mining men of experience know that it would be a great mistake to place a man in charge of a mine who had not the practical knowledge necessary to operate it successfully, although he might possess all the other qualifications just mentioned.

WORKING UP FROM THE BOTTOM INSURES SUCCESS

The man who has worked himself up from the bottom to the position he occupies is bound to be a successful man, as he has learned many kinks that he could not learn in any other way than by performing the work himself. The practical knowledge of mining work and methods, gained in this way, added to the study of the theory of mining and new ideas gained by reading practical papers and books on mining, gives a man a good start and insures his success.

To succeed in practice, a mine foreman must know what is required of him, both by the mining law of the state and by the company who employs him. Someone says, "But, we all know that," assuming a knowledge that many foremen do not possess. I have known a few old, experienced foremen to fail badly, because of their lack of knowledge of the mining law of the state.

A mine inspector remarked to me, not long ago, that a certain mine foreman told him, "I wish I knew all that is in that book," referring to a copy of the Mine Laws of Pennsylvania, which only proves what I have said that not all men who hold positions as mine foreman know the requirements of the mine law.

FOREMAN MUST HAVE BUSINESS ABILITY

It is important that a foreman possess, also, an ability to do business, because he must transact much important business for his employers every day. Where a foreman lacks business ability, he will often authorize expenditures of large sums of money that could be saved by the adoption of a different method. Daymen are put to work when the material they need is not on hand and the delay in waiting for its arrival means expense to the company. Much money may be foolishly spent through the adoption of impracticable methods

of performing work in a manner that good business judgment would not have permitted.

Again, no operator or superintendent would put a man in charge of a mine whom they knew to be dishonest or who had a reputation for being untruthful. They would know that they could not rely on such a man and that the men working under him would soon come to understand that his word could not be depended upon, which would lead to much dissatisfaction and the loss of good workers in the mine. Men prize truthfulness and square dealing, in a foreman, more than any other one thing.

Hooversville, Penn.

J. H. TIPTON,

Mine Foreman.

Letter No. 17—A mine foreman is not born; he must learn the business by practical experience, gained in the mine from day to day. This is only possible where a man is naturally observing, thoughtful, ambitious and energetic. Without these characteristics he cannot hope to make a successful mine foreman.

In his dealing with men, a foreman must be straightforward and honest, give every man a fair deal, have no favorites, make no promises that he cannot perform and, above all, be temperate in his habits and able to control himself.

In respect to the work in charge, a mine foreman must observe conditions closely, so as to be able to plan his work successfully, that there may be no necessity of doing the same thing twice over. In order to accomplish this, the foreman must be a man of wide experience and familiar with every detail of the work in his charge, from digging a car of coal to hauling it out of the mine.

DAILY DUTIES OF MINE FOREMEN

It is important for a mine foreman to know every requirement of the mining law and observe it carefully. In his daily inspection of the mine, it is not well for him to follow the same order, each day, of visiting the men's places. Shirkers, then, soon learn the time when the boss may be around. But, when a different course is followed each day, these men are liable to be surprised when they are not looking for the foreman to see him appear. By so doing, better results are obtained and the work is done more thoroughly, at less expense.

A qualified foreman will give special attention to matters of ventilation, drainage, timbering and the mining and loading of the coal. In my opinion the qualification of a foreman is not measured by his knowledge of the higher arithmetic or his ability to memorize formulas. He may not know the weight of a cubic foot of air or understand how to calculate the horsepower required to double the quantity of air in circulation.

In practice, the foreman will speed up his fan until he obtains the desired results. Or, he will look over his stoppings and see if they are leaking and need to be repaired. He will study how, in other ways, he can increase the quantity of air in circulation by cleaning up the airways, or shortening the distance the air must travel.

W. H. CLARK.

Bolivar, Penn.

[This letter will close the discussion of "Qualified Mine Foremen."—Editor.]

Inquiries of General Interest

Size and Kind of Timber Required

We have a considerable tract of timber that we think of cutting this winter and would appreciate any information that *Coal Age* or its readers can give in regard to the kind of wood and sizes of props, crossbars, cap-pieces, etc., that are commonly used in coal mines and the prices paid, f.o.b. cars.

Kindly state the minimum diameter of posts of different lengths. When should the timber be cut to give the best service in the mine, and what is the present demand for mine timber? As we are unacquainted with mining requirements, this information will be of much value to us and to others in a like situation with timber to cut.

WOODSMAN.

Union Furnace, Penn.

Before starting to cut a tract of timber it is well to know how and where the wood can be used. In the early days when there were large tracts of land to be cleared for cultivation, the wood was corded and sold as needed for fuel. The heavier sticks were all cut to 4-ft. lengths and brush piled and burned. Today, conservation of material demands the utilization of whatever can be put to a useful purpose.

Mine timber should always be cut in the winter months, from early in December to the last of February, when the wood has a minimum amount of sap and will season quicker. The seasoning of the wood greatly prolongs the life of the timber in the mine, as it preserves it from being destroyed by fungus growth or dryrot. As quickly as cut in lengths, post timber should be stacked on end, or loaded and shipped.

Requirements in regard to size of posts, crossbars, caps, sprags, ties, etc., differ so much in different localities that the only safe policy to pursue is to ascertain the need in each district and, as far as practicable, cut to order. When a tree is felled the trunk is generally used for the heavy legs and crossbars or collars needed for timbering shaft bottoms and sidetracks or partings. The branches are cut to lengths required for post and entry timbers, while the lighter portions furnish track ties, lagging and sprags. All waste ends are split into cap-pieces.

Having ascertained the lengths of post timber needed by mines in the market for timber, a good rule to adopt is to make the diameter of the small end of the post, in inches, equal to its length in feet, which gives the post about equal resistance to bending and crushing. Bottom and parting timbers are usually required in 14- or 16-ft. lengths and should have a minimum diameter of from 10 to 14 inches, depending on depth of cover and roof conditions in the mine.

Cap-pieces are usually 16 or 18 in. long, 2 in. thick, and a little wider than the top of the post. The size and length of track ties will depend on gage of mine track and kind of haulage employed. Motor haulage re-

quires heavier ties than mule or rope haulage. The size of ties also depends on the capacity of the mine cars.

At present there is a greatly increased demand for all kinds of mine timber. Oak timber is generally preferred on all slopes and main headings, while the softer woods, such as pine, hemlock, spruce, cedar, hickory, walnut, birch, etc., are used in rooms and cross-entries where long life is not required. The price of mine timber varies with the supply and demand from $\frac{1}{2}$ cent to a cent and a half per running foot for prop timber.

Detection of Carbon Monoxide in Mines

Kindly explain the most practical means of detecting the presence of carbon monoxide in mine workings, and state if the safety lamp can be used for that purpose.

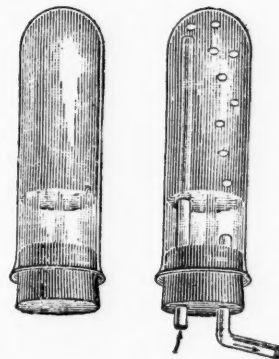
Fairmont, W. Va.

FIREBOSS.

The most practical method of detecting this gas in the mine workings is by observing its effect on small caged animals, such as mice or birds, when exposed to the gas. It is stated that a mouse or a bird will show symptoms of collapse and become unconscious in about one-twentieth of the time required to produce the same effect on a person exposed to the same atmosphere.

Another simple test, though less practical, is that known as the "blood test," which consists of dropping three large drops of blood into a fluid ounce of water

contained in a small vial provided with two glass tubes passing through the cork, as shown in the accompanying figure. By this means, the air suspected of containing carbon monoxide is sucked or drawn through the liquid. If the air contains but from 0.01 to 0.03 per cent. of carbon monoxide, the liquid in that vial will at once assume a pink hue. Care must be exercised in observing this test. The pink hue is most readily detected by comparing the liquid in this vial with the original liquid contained in a separate vial that has not been exposed to the action of the gas. The original liquid has a buff-yellow color, caused by the blood in the water.



THE BLOOD TEST FOR CARBON MONOXIDE

ing the liquid in this vial with the original liquid contained in a separate vial that has not been exposed to the action of the gas. The original liquid has a buff-yellow color, caused by the blood in the water.

The two methods just mentioned are the most practical means of detecting carbon monoxide in mines. The flame of the safety lamp will not detect this gas until it is present in proportions far in excess of what is required to kill a man. Any form of portable apparatus for gas analysis cannot be recommended for general use in detecting the presence of this gas.

Examination Questions

British Columbia Examination, First-Class, Nov. 13, 1917

(Selected Questions)

Ques.—Is concussion or compression dangerous in a fiery mine, and why?

Ans.—A certain degree of compression always results from a heavy concussion of the air in mine workings. The danger of such compression of the air will depend on the violence of the concussion producing it and the volume of the workings in which it occurs. The theory of the danger of "concussion," in respect to the explosion of gas or dust, has been promulgated by James Ashworth, an experienced mining engineer, and there is no doubt that its tendency is to increase the explosive effect of either gas or dust. This is particularly true in regard to a fiery mine where the volume of the workings is restricted and a violent concussion is produced by a windy or blownout shot, or an overcharge of powder, in blasting. The reason is that the heat of compression raises the temperature of the air and renders it more highly explosive, besides increasing the intensity of the explosion that results.

Ques.—In the event of an explosion of firedamp, what changes take place in the mine atmosphere, and what first steps are necessary to rescue life and property? What dangers are to be anticipated in rescue work?

Ans.—An explosion of firedamp not only consumes a portion of the free oxygen of the air, but produces considerable quantities of carbon dioxide (CO_2), carbon monoxide (CO) and water vapor (H_2O). As a result, there remains, also, a considerable excess of free nitrogen and, frequently, some unburned methane (CH_4). The proportion of carbon monoxide produced will depend upon the amount of available oxygen present in the air, the production of the monoxide being greater where the air supply is limited.

The first steps to be taken in rescue work, should an explosion occur in the mine, are the following: Call for volunteers and selecting the most experienced men among them equip these with safety lamps, breathing apparatus, tools and material for making repairs. Organize the rescuers in three divisions—an advance party wearing breathing apparatus, a repair party equipped with the necessary tools and material, and a serving party to supply the necessary material and assist in other ways in making repairs and carrying out those who may be rescued.

At the same time, the ventilating apparatus must be examined and any necessary repairs made as quickly as possible, in an effort to reestablish the ventilating current in the mine. Also, at the same time, dispatch messengers for medical aid and supplies, such as blankets, stretchers, ambulances, and other first-aid material for resuscitating those rescued from the mine.

The dangers to be anticipated in rescue work arise from the presence of afterdamp in the mine and the

dangerous condition of the mine roof owing to dislodged and broken timbers. The destruction of doors, stoppings, overcasts and brattices in all parts of the mine renders the circulation uncertain and will often expose the rescuers to danger, unless proper precaution is taken not to advance ahead of the air.

Ques.—What horsepower of engine is required to ventilate a mine working 450 men? Assume a water gage of 1.5 in. and the combined efficiency of fan and engine as 60 per cent.

Ans.—The Coal Mines Regulation Act of British Columbia requires the circulation of at least 100 cu.ft. of air per man per min., and 300 cu.ft. per mule per min. Hence, assuming a single mule will serve 30 men, the number of mules required will be $450 \div 30 = 15$ mules. This will require a total circulation of $450 \times 100 + 15 \times 300 = 49,500$ cu.ft. of air per minute. Then, assuming a total efficiency of 60 per cent., the indicated horsepower required for this circulation is

$$H = \frac{Q(5.2wg)}{K(33,000)} = \frac{49,500 \times 5.2 \times 1.5}{0.60 \times 33,000} = 19.5, \text{ say } 20 \text{ hp.}$$

Ques.—A current of 130,000 cu.ft. of air per minute is delivered at the foot of the downcast shaft and there divided into three splits as follows: Split A, airway 6 x 6 ft., 4500 ft. long; Split B, airway 5 x 7 ft., 5000 ft. long; Split C, airway, 6 x 5.5 ft., 4000 ft. long. What quantity of air will pass through each airway?

Ans.—The area, perimeter and length of the several splits are as follows:

A, $a = 36$ sq.ft.; $o = 24$ ft.; $l = 4500$ ft.

B, $a = 35$ sq.ft.; $o = 24$ ft.; $l = 5000$ ft.

C, $a = 33$ sq.ft.; $o = 23$ ft.; $l = 4000$ ft.

There are no common factors in either the areas or the perimeters, in this case, but the lengths can be reduced to 9, 10 and 8 respectively, when finding the distribution of the air. The quantity of air passing in each split, assuming no regulators are used, is calculated thus:

$$\text{A, } a\sqrt{\frac{a}{lo}} = 36\sqrt{\frac{36}{9 \times 24}} = 14.70$$

$$\text{B, } = 35\sqrt{\frac{35}{10 \times 24}} = 13.36$$

$$\text{C, } = 33\sqrt{\frac{33}{8 \times 23}} = 13.97$$

Sum of potentials 42.03

Since the quantity of air passing in each split is proportional to the split potential, the distribution of the air between these splits is found as follows:

$$\text{A, } q_a = \frac{14.70}{42.03} \times 130,000 = 45,470 \text{ cu.ft. per min.}$$

$$\text{B, } q_b = \frac{13.36}{42.03} \times 130,000 = 41,320 \text{ cu.ft. per min.}$$

$$\text{C, } q_c = \frac{13.97}{42.03} \times 130,000 = 43,210 \text{ cu.ft. per min.}$$

Total circulation 130,000 cu.ft. per min.

Coal and Coke News

For the Busy Reader

The fuel administrator for South Carolina has been given authority to divert coal to meet domestic requirements in that state.

Charles M. Shannon, of Phoenix, has been appointed fuel administrator for Arizona. Will L. Clark, the retiring fuel administrator, was forced to resign for business reasons.

Vaudeville managers and representatives of the motion picture industry have requested exemption from the lightless nights order. The request was refused by Dr. Garfield.

Any local officials who confiscate coal will be dealt with severely by the Fuel Administration. The confusion that would result from such action would be so demoralizing that drastic action will be taken to prevent the practice from becoming general.

All-rail shipments of coal to the Northwest have been suspended. The action was taken after conferences with John F. McGee, state fuel administrator for Minnesota. Mr. McGee believes that the Northwest can get along for 90 days at least without further rail shipments.

Use of lignite for the production of fuel oil, gasoline substitutes, ammonia, coal tar and gas for power is sufficiently promising to cause the Secretary of the Interior to ask Congress for an appropriation of \$100,000 to investigate the economic practicability of such a plan. It is proposed to have the investigation conducted by the Bureau of Mines.

Through the efforts of W. D. McKinney, secretary of the Southern Ohio Coal Exchange, the mines in southern Ohio are receiving practically all the cars they can load. The fuel administration cooperated with the railroads to this end particularly on account of the fact that it requires one-third of the motive power to handle coal from these mines, as compared with other coal-mining districts.

A mixture consisting of 20 per cent. anthracite culm and 80 per cent. bituminous coal has been used successfully by the Carpenter Steel Co., at Reading, Penn. With forced draft, the proportion of culm has been increased to 35 per cent. In the first instance, a 100 per cent. boiler rating and an efficiency of 70 per cent. were obtained. In the latter case, 115 per cent. of boiler rating and an efficiency of 76 per cent. were reached.

To assist in clearing the railroad congestion at Pittsburgh, D. W. Kuhn, the fuel administrator for Pittsburgh has been given jurisdiction over Allegheny, Beaver, Westmoreland, Fayette, Green and Washington Counties. By thus extending his authority, it is expected that he will be able to give more effective help to A. W. Thompson, the railroads' representative, in his effort to right a traffic situation that has become more than serious.

HARRISBURG, PENN.

"The prohibition amendment should be made an issue and should be put before the people immediately; and it should be impressed upon them that the way they vote legislators will vote on the amendment," said Governor Brumbaugh, on Dec. 20, when asked as to his course since the prohibition amendment is up to the legislatures of the various states.

The Governor says that the people know what the last legislature did on prohibition legislation. Unless the people of Pennsylvania manifest a very strong sentiment in favor of adoption of the amendment the men constituting the legislature will do the same thing again. The Governor does not think it wise to spend thousands of dollars for an extra session and have it

voted down, but is willing to do so if there is some assurance that the sentiment of its members has changed.

Many coal men would like to see the Governor call an extra session, and many believe that he would like to call an extra session of the legislature to have the amendment adopted during his term of office; but as the last legislature was against any such measures and will be so at an extra session, Governor Brumbaugh does not see much use in calling one.

In the coal regions, where there is much anti-liquor opposition, there is an undercurrent of feeling that there should be a check placed on the saloons, especially at this time, when the cry is "more coal." It is reported that should an extra session be called the people of the coal regions might bring pressure to bear on their representatives, and the Governor would have a chance of getting the prohibition amendment through.

The State Administration and its departments are willing to do all in their power to speed up the coal transportation in the state so long as their efforts do not interfere with the Federal orders regarding coal shipments.

Chairman Ainey, of the Public Service Commission, on Dec. 21 said that he had not received any request from Philadelphia to use the machinery of the commission to aid that city in its present coal shortage. He said: "We would be willing, and so would the Governor, to do all in our power to help any locality. We have certain powers under the law if there is any intent to delay traffic to act with the transportation companies, but we would not do anything that would be in conflict with the Federal orders regarding coal shipments."

Coal lines of central Pennsylvania are in danger of being shut down because of the fuel famine. Although this sounds like a paradox, scores of mines operated with electricity furnished by the Penn Central Power Co., of Huntingdon and Blair Counties, may be seriously affected. Northern Cambria County mines are menaced. The power company furnishes nearly every important mine in this section.

Fuel Administrator Kuhn has wired the national fuel administrator at Washington for authority to take over coal standing on yard tracks in the Pittsburgh district, caught in the tangle of congestion which has seriously impaired transportation and seriously depleted the car supply.

The general operating committee of Eastern railroads have agreed, it is said, to turn over the coal to Mr. Kuhn as soon as authority from Washington is received. In the case of coal consigned to southern ports, the consent of the consignees for its use has been obtained.

A survey is being made of manufacturing plants with a view to mobilizing enough motor trucks to move coal from mines in the Pittsburgh district on Sundays to places in the district where it is most needed.

Coal operators on the South Fork branch of the Pennsylvania R.R. are again complaining of discrimination on the part of the Pennsylvania R.R. in favor of the Berwind White Coal Mining Co. The Berwind interests contribute about half of the South Fork output, but it is alleged that they get five times as many cars as all other mines together. The Berwind interests, of course, own their own cars, but the point is made that if the railroad can handle solid train loads of cars it should handle Berwind cars and its own coal equipment on a fifty-fifty basis. Several weeks ago similar figures were prepared by the South Fork operators and turned over to William Potter, fuel administrator for this state. It was understood that the help of Washington was to be invoked, but apparently no orders have been issued as yet.

Judge P. A. O'Boyle, of Luzerne County, has rendered an opinion in the case of Mrs. Joseph Lots against the Pennsylvania Coal Co., in which he affirms the disallowance of the claim of the plaintiff under the Workmen's Compensation Act, and dismisses the appeal taken from the decision of George W. Beemer, referee.

This is one of the first compensation cases coming before the courts on appeal. The plaintiff's husband was a slate picker

and died from what was alleged to be a wound on his finger, sustained in the course of his employment. The referee held that the dependents of the decedent were not entitled to compensation, that it had not been proved that he died as a result of an injury received in the course of his employment.

Judge O'Boyle reviews the proceedings and legal decisions wherein the burden of proof is on the petitioner to establish her right to compensation, and he closes by saying: "Under such circumstances as are presented here, there is nothing in our judgment for us to do—the facts having been found against the claimant by the referee—but to affirm the disallowance and dismiss the appeal."

Auditor General Charles A. Snyder has put a certified accountant to work on the books of the State Insurance Fund to make a special audit for him, as he is not satisfied with the statements made of the cost of administration and prospects that the funds in sight will provide for the overhead until the first of June, 1919. The Auditor General has refused to discuss the proposition beyond saying he wants to be sure that there is enough money in sight, and officials of the fund say they are confident that the new audit will show the recently declared dividend will be justified. The action may hold back the payment of the recently declared dividend to the policyholders.

The fund accounts were audited recently by officials of the State Insurance Department. The fund was allowed \$300,000 by the legislature for organization and administration, and the session of 1917 appropriated \$200,000 more. If this appropriation will not hold out until the next Legislature meets, cuts will be made in the pay-rolls or the dividends.

PENNSYLVANIA

Anthracite

Wilkes-Barre—According to an official of the Lehigh Valley Coal Co., the inability to find sufficient men workers will shortly be counteracted by the transfer of young men from the breakers and outside employment, these places to be filled by women and girls. A special uniform is under consideration. It has been decided that sex is no bar to employment outside the shafts. Women can easily perform the duties of breaker hands, head-tenders, weighers and runners.

Hazleton—Out of respect to the memory of the late Superintendent W. H. Davies, of the Lehigh Valley Coal Co., in the Hazleton district, the mines of that district were idle the afternoon of Dec. 18, when he was buried.

Pottsville—The Philadelphia & Reading Coal and Iron Co. has raised the wages of clerks and other employees who had been overlooked during the successive rises in compensation granted to other mine employees. No notice of the company's action was given until the pay for the first half of December was received. The increase will average about 15 per cent.

Schuylkill Haven—The Philadelphia & Reading Coal and Iron Company on Dec. 20 announced plans whereby this town will become one of the biggest coal producing centers in the Schuylkill region. Machinery is being installed at the Big Landingville Storage yard for cleaning all the coal stored along Schuylkill, Mine Hill and Mount Lefee Valleys. The culm banks in these valleys contain millions of tons of coal. All the best modern appliances for cleaning coal are being installed, including shakers and screens, and the plant will run with three shifts, day and night. It is expected that fully 2000 tons of coal will be turned out daily in a section where coal cars are not congested and which is only 90 miles north of Philadelphia.

Sandy Run—A new haulage system has been installed at the No. 5 stripping of the Upper Lehigh Coal Co. A 50-hp. gasoline engine is now in use in place of steam power which was heretofore exclusively employed. Although the coal company has plenty of fuel right at the mine, it is bringing such a good price just now that they

find it more economical to adopt other methods in the operation of the stripping.

Pittston—Announcement was made on Dec. 18 of changes to take place among general mine foremen of the Pennsylvania Coal Co. Ludwig Weichel, foreman at the Butler colliery, goes to No. 5 colliery to take the place of Mr. Bowen, who goes to No. 6 colliery to succeed Alexander Allan, the latter going to Ewen colliery. James R. Pollard, assistant mine foreman, succeeds Mr. Weichel at the Butler colliery.

Bituminous

Johnstown—Because of a shortage of water, the mining plant of the Highland Coal Co. in Constable Hollow has been forced to suspend operations. The company uses a steam hoist that draws coal cars up to a slope. Even the coal mines in Central Pennsylvania may be compelled to shut down for lack of coal. Scores of mines operate with electrical current furnished by the Penn Central Light and Power Co., of Huntingdon and Blair Counties. The company officials say the plant will shut down unless coal can be procured.

WEST VIRGINIA

Clarksburg—Operations have been started at a new coal-mining plant just completed between Gassaway and Clay by the Groves Creek Coal and Coke Co., of Weston, comprised of Louis Bennett, J. C. Roane, J. H. Edwards, J. B. Henry, Ernest G. Smith and others. The company has 2369 acres with three veins of coal underlying it and it is now operating the lower Kittanning vein. Its property has a frontage of a mile and a half on the Elk River. Mr. Smith is the general manager and has his offices at Weston.

Charleston—One of the most unusual mine accidents ever recorded by the state department of mines was one included in the report for November, which occurred outside the mine of the Proctor Coal Co., of Logan County, in which four men, Harold Hamilton, Isaac Walker, J. M. Bear and Wingfield Enochs all lost their lives. These men, together with three others, were changing the wires from a temporary substation to a permanent rotary substation which had just been completed and in stretching the necessary connecting wires, allowed the line to swing to such an extent that it came in contact with the high-voltage wires of the Logan County Light and Power Co., which carried 44,000 volts. The four men were killed instantly and the three other were badly burned.

Lynch—A daily output of 300 cars of coal will be the capacity of the United States Coal and Coke Co. when its mines at Lynch are all put in operation next year. This development was begun in September. The operation will be the largest in the Southern Appalachian Mountains. Ten openings have been made. Lynch has now 2000 inhabitants and there are 300 houses completed. The main street of two miles has been concreted.

TENNESSEE

Knoxville—Twelve men were killed in an explosion in the Dour Coal Co.'s mine near Nemo, on Dec. 19, a number of others are imprisoned in the mine. Twelve bodies have already been recovered by relief workers, who are making speedy headway in reaching the entombed men.

KENTUCKY

Whitesburg—Fire believed to have been the work of incendiary origin destroyed part of the town of Wayland, north of here, causing a loss of \$100,000. Among the buildings destroyed was the storehouse of the Elkhorn Mining Corporation. Rewards have been offered for the alleged incendiaries and armed guards are now protecting adjoining plants.

OHIO

Martins Ferry—Edward R. Sizer, Jr., of Montana, is preparing to open a coal mine on the Atkinson property at Deep Run, north of here, and expects to have the mine in operation by the first of the year. The mine will tap about 50 acres of coal land and will supply the mills and factories in this vicinity with coal.

Attorneys Francis and Kehrler, Martins Ferry, recently filed suit for \$175,000 damages—said to be the largest sum ever asked in Belmont County—alleged by the Meister Coal Co. to be due it from the Sunnyside Electric Co. through failure to furnish electric power for the plaintiff's mines. The petition claims the contract was made Apr. 15. It further alleges that the defendant refused and neglected to supply the power as provided in the contract.

Wellston—It has been determined that recent destructive fires at mines in this vicinity have been caused by a band of youths infected with I. W. W. ideas, according to investigators from the Ohio Fire Marshall's office. Arrests are to be made shortly.

Bellaire—The National Coal Co., of Cambridge, has started loading at the new Loomis mine, located on the Baltimore & Ohio R.R. near Bellaire in Belmont County. The mine is a shaft operation and one shaft 180 ft. deep has been completed. Another shaft is being sunk. It is expected to load 2000 tons daily within a short time.

ILLINOIS

Girard—Escaping gas from old workings is blamed for an explosion in the mine of the Montour Coal Co. here which injured five men, wrecked the shaft and necessitated suspension. It is said that a powder charge, during the night, punctured the wall separating the new workings from the old, and when the men went to work in the morning their lamps ignited the gas. The temporary suspension threw 325 men out of work.

Zeigler—Two of the 18 men burned in the three explosions in the mine here are dead. The mine is afire and is sealed. The average daily output was 4500 tons. Last year the mine produced over 1,000,000 tons of coal.

Elkville—About 2800 acres of farm land has been leased east of here and four other companies are seeking coal rights in this section, and indications are that at least one new mine will be sunk in the spring. This activity here is caused by the fact that the Union Electric Light and Power Co., of St. Louis, which is closely associated with the Union Colliery Co., is rushing work on its big mine north of here.

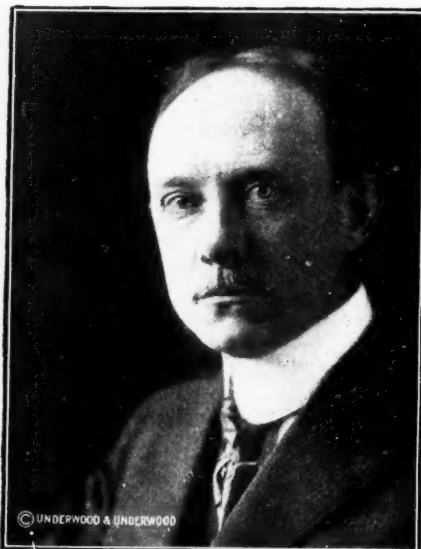
Clarksdale—Drillers recently struck a 5½-ft. vein of excellent bituminous coal one mile south of Clarksdale, west of Pana, on the Wabash Railroad.

Foreign News

Zurich—The electrical works at Kolin, a town of Bohemia, 30 miles east of Prague, have been compelled to shut down for lack of coal, with serious results to the surrounding country. Forty-nine towns and villages are without light, and 31 big industrial plants and sugar refineries have been closed.

Personals

Alfred D. Flinn, deputy engineer of the Board of Water Supply, New York City, has been elected Secretary of the Engineering Council, Secretary of the Engineering Foundation, and Secretary of the United



ALFRED D. FLINN

Engineering Society. Thus these "super-society" activities will all center in one man. Mr. Flinn brings to the position a

broad executive and organizing experience. He is especially successful in laying out large problems and in securing for their execution the hearty cooperation of his co-workers. The positions on which he enters require those qualities in a high degree, and this was the determining factor in Mr. Flinn's selection. Mr. Flinn is a member of the board of direction of the American Society of Civil Engineers and chairman of its committee on library.

Harry Mountz, of Wilkes-Barre, Penn., chief mining engineer of the Lehigh Valley Coal Co., has been appointed superintendent of the Hazleton division and the Cox Bros. & Co., to succeed the late W. H. Davies. Mr. Mountz is a graduate of State College and is about 35 years of age.

Harry H. Otto, of Wilkes-Barre, Penn., has been appointed division engineer of the Lackawanna region for the Lehigh Valley Coal Co., to succeed Mr. Mountz, who has been made superintendent, as mentioned elsewhere in these columns. **Robert Evans** has been appointed to succeed Mr. Otto.

A. T. Shurick, who recently resigned his position on the editorial staff of "Coal Age" to enter the United States Army, has been honored by a commission as captain in the Engineer Officers' Reserve Corps. Captain Shurick is in Class A, the class which in an advance will be in charge of establishing the lines newly captured from the enemy.

J. C. Mahen, Jr., of Birmingham, Ala., for the past four years vice president of the Sloss Sheffield Steel and Iron Co., has tendered his resignation. Mr. Mahen has had executive charge of the operations of the furnaces, coal and ore mines and other physical properties of the company, and has been highly successful in their development and improvement, and was universally popular and well liked by employees. Mr. Mahen has not yet announced his future plans, but will likely devote his attentions to further development of extensive mining interests in which he has large holdings.

Publications Received

"Elementary First-Aid for the Miner—in Slovak and English." By W. A. Lynott and D. Harrington. Department of the Interior, Bureau of Mines. Miners' Circular 23. Illustrated, 39 pp., 5½ x 9 in.

"Tests on Clay Materials Available in Illinois Coal Mines." By R. T. Stull and R. K. Hursh. Ceramics Department, University of Illinois. State of Illinois, State Geological Survey. Illustrated, 130 pp., 6 x 9 in.

"Abstracts of Current Decisions on Mines and Mining Reported from May to August, 1916." By J. W. Thompson. Department of the Interior, Bureau of Mines. Bulletin 143, Law Serial 9. Unillustrated, 72 pp., 5½ x 9 in.

"Abstracts of Current Decisions on Mines and Mining Reported from January to April, 1917." By J. W. Thompson. Department of the Interior, Bureau of Mines. Bulletin 152, Law Serial 11. Unillustrated, 79 pp., 5½ x 9 in.

"Combustion in the Fuel Bed of Hand-Fired Furnaces." By Henry Kreisinger, F. K. Gytiz and C. E. Augustine. Department of the Interior, Bureau of Mines. Technical Paper 137. Illustrated, 76 pp., 5½ x 9 in.

Industrial News

Ironton, Ohio—The Ironton Engine Co. announces that F. C. Tomlinson has been elected as treasurer of the company. He assumed the duties of his office on Dec. 1.

Nashville, Tenn.—Failing to obtain a single bid in response to its advertisement for coal for the municipal lighting plant, the city commission has ordered re-advertising.

Youngstown, Ohio—Approximately 50 per cent of the steel-making capacity of Youngstown plants, representing fully 10 per cent of that of the entire United States, is idle owing to coal shortage, and has been for days.

San Antonio, Tex.—The American Lignite Briquette Co., which manufactured a fuel from the combustible matter in the city's garbage, has been dissolved and certificate of dissolution has been filed in the office of the Secretary of State at Austin.

Bloomington, Ill.—Representative coal men have organized the McLean County Coal Bureau for cooperation in handling and distributing the product. W. S. Harwood, of Bloomington, was elected president

and George W. Parker was elected secretary.

Washington, D. C.—Orders will soon be issued by the Fuel Administration giving to local fuel administrators authority, in emergencies, to close some or all industrial plants, theaters, halls and places of amusements, in order that domestic consumers' needs may be met.

Lexington, Ky.—In order to expedite relief of coal shortages in central Kentucky towns, the Louisville & Nashville R.R. has been attaching cars of coal at this point to its local passenger trains and leaving them at the points from which insistent demands were made.

Louisville, Ky.—Rigid enforcement of the smoke ordinances of the city has been ordered by Col. Albert Scott, the new inspector, although in view of the necessity of many heating plants burning coal for which they are not devised excessive smoking has been rendered unavoidable.

Barbourville, Ky.—An extension of the Louisville & Nashville R.R. in Harlan County, Ky., to enter the holdings of the Kentia corporation, is projected for next year. This extension, it is stated, will be followed by the installation of 15 or more coal operations at an outlay of \$100,000.

Springfield, Ill.—Director Evan John, of the Illinois Department of Mines and Minerals, has announced a commission of nine men to investigate the condition of the mines in Franklin County. This is the outgrowth of the explosion at Zeigler and Christopher and minor accidents in other mines.

Chicago, Ill.—Sale of the coal lands of the Chicago & Eastern Illinois Railroad Co., which is in the hands of a receiver, to George C. Van Tuyle, Jr., of New York City, was confirmed by Judge Evans in the United States district court in Chicago yesterday. Originally the properties were appraised at \$5,000,000.

Louisville, Ky.—In order to prevent hoarding of coal it is required in a recent order by the local fuel administration that declarations must be made by consumers, before they are sold any more coal, as to the supply on hand, unfilled orders with other dealers, etc. These statements may be made over the telephone.

Defiance, Ohio.—Residents of East Defiance helped themselves to a carload of coal a B. & O. train was pulling through the city when a car, loaded with coal, got a hot box. The car was detached from the train and shot onto a siding. East Side people got busy and before morning the car had been emptied of its cargo.

Louisville, Ky.—The Louisville Railway Co., acting on the recommendation of the war board of the Electric Railway Association, immediately called on its employees to use all possible means to conserve coal and issued pledge cards to trainmen which obligated signers to be sparing in their use of power. Without an exception the men signed up.

Petersburg, Ill.—The Black Diamond mine, owned by John Mallgren, who recently gave bond at Springfield to answer to a charge of exacting an illegal price, has resumed after a shutdown of several days. Coal is being delivered locally, but no collections will be made until the price controversy has been settled. The Riverside mine, owned by John Mallgren, Sr., is still closed for repairs.

Louisville, Ky.—According to the penalty clauses of the franchise as interpreted by the City Legal Department, consumers of natural gas are entitled to reduce their net gas bills of the Louisville Gas and Electric Co. for the month of December by 30 per cent, while the city proposes to forfeit a bond. The gas supply virtually failed during the cold weather.

Buckhannon, W. Va.—Organization of the newly formed Buckhannon-Tygarts Valley Coal Operators' Association is to be perfected at a meeting to be held here Jan. 7. Preliminary meetings have already been held here and at Philippi and some twenty operators have taken membership. J. E. Shinn of this city, is temporary chairman and H. B. Kramer of Uniontown, Penn., temporary secretary.

Pittsburgh, Penn.—Operators in the Pittsburgh region claim their production has been curtailed more than 75,000 tons in the last 30 days, due solely to an inadequate car supply. Labor troubles are starting at various mines, the mine workers claiming that they have unsteady and uncertain work, which is attributed to the railroads for their failure to furnish sufficient coal-carrying equipment.

Carlinville, Ill.—The Sharon Coal Co., of Peoria, Ill., has filed suit here against the Carlinville Coal Co. for \$25,000 damages on account of the refusal of the Standard Oil Co., which recently purchased the Carlinville company's mine to furnish the Sharon company with coal under the contract which it had with the Carlinville company. The Standard Oil Co. is using the entire output for itself.

Sharon, Penn.—Shortage of coal and steel said to be due to railroad congestion forced the closing of two plants in this district. About 1700 men are thrown out of work. The sheet mill of the American Sheet and Tin Plate Co., employing 700 men, suspended operation on Dec. 18 to Jan. 1, on account of a lack of steel. Inability to obtain coal caused the Sharon Steel Hoop Plant to close laying 1000 men idle.

Pittsburgh, Penn.—R. W. Gardiner, commissioner of the Pittsburgh Coal Operators Association, has announced that unless the railroads in the Pittsburgh district furnish the coal operators with more cars for loading purposes within the next 30 days, the latter will be compelled to ask President Wilson for an advance of 40 to 50c. a ton, over present prices on account of their added costs of operation during the last two months.

Nelsonville, Ohio.—The Nelsonville Merchants' Association has lodged a complaint with Governor Cox because of lack of cars on the H. V. Ry. It is averred that a large majority of the railroad's cars are used to haul coal from West Virginia mines. In the complaint it is stated that during the first 15 days of December the Nelsonville district produced but 145,750 tons, when the normal production should have been 349,000 tons.

Asheville, N. C.—Attorneys representing the Southern Coal Co. of this city have filed suit against the Southern Ry., seeking to determine whether the railroad has a right to seize coal billed to a dealer. A claim of \$1750.38 for coal seized last August and September and punitive damages of \$2500 are features of the petition, which gives complete details as to every car of coal involved. A municipal wood-yard has been established in Asheville to eke out the supply of fuel.

Louisville, Ky.—In order to comply with the regulations of the Fuel Administrator, the Keystone Coal and Coke Co., of Louisville, is being liquidated without including J. W. Lamb, a coal operator of Greenville, Ky., as a stockholder. President Charles W. White stated that the United States district attorney construed this dual interest as a technical violation of the law. The State Fuel Administrator said that investigations are under way into this phase of the coal trade in Kentucky.

Washington, D. C.—Secretary Lane has recommended to Congress an appropriation of \$100,000 to investigate commercial and economic practicability of using lignite coal for producing fuel oil, gasoline substitutes, ammonia, coal tar and gas for power. There are immense quantities of lignite deposits on public lands, but the coal is of such character that it does not stand transportation in its natural state and is of small value for fuel except in the immediate vicinity of the mines.

Louisville, Ky.—Complaints of a serious car shortage are received from all parts of the Kentucky coal-producing fields. Many small workings in Knox County have had no cars for two weeks and larger operations have fared proportionately. Bell County mines have spent much of the past fortnight in idleness for the same reason. Complaints against the supply furnished by the Illinois Central R.R. are general in western Kentucky from mines which are not under contract to sell to the railroad.

Uniontown, Penn.—Formation of a selling pool, which will dominate the 350,000 acres of bituminous coal in southwestern Pennsylvania and adjacent counties of West Virginia, and fix a single price on future sales, together with the flotation of a \$16,000,000 bond issue among the mortgage creditors of J. V. Thompson, is the first step announced by Arthur Havemeyer on Dec. 19 in behalf of the Thompson liquidating committee, which has undertaken to dispose of the Thompson estate.

Columbus, Ohio.—A committee of coal operators from the Jackson County district, appearing before the Ohio Public Utilities Commission, in order to secure some relief from the car shortage, declared that the shortage is the worst in the history of the district, and that the Detroit, Toledo & Ironton R.R., the principal one serving the district, has not supplied a car for

two weeks, except for railroad coal. The commission has issued an order to the railroad to supply cars for other loading than its own.

Philadelphia, Penn.—Figures compiled by the anthracite operators show substantial increases in the quantity of coal delivered to Philadelphia, eastern Pennsylvania points, Camden, Trenton and Baltimore, compared with last year. Philadelphia, according to these figures, shows an increase of 377,758 tons; Trenton, 57,979; Reading, 21,588; Lancaster, 14,544; Harrisburg, 10,231; Chester, 10,342, and Wilmington, 11,086. Adverse weather conditions have seriously interrupted mining operations and interfered with transportation.

Hopkinsville, Ky.—The properties of the old Petersburg Coal Mining Co. and the Virginia Coal Co., at Mannington, in Christian County, have been purchased by the Memphis Gas and Electric Co., of Memphis, Tenn. The purchaser will operate both mines and utilize the product for manufacture of gas as well as for operation of its power plant. The Petersburg Co. owned mining rights to 800 acres and the Virginia company owned 300 acres in fee simple. The properties adjoin, mine openings being 500 ft. apart. A subsidiary company, it is expected, will be organized to operate the mines.

Pottsville, Penn.—When the time for applications for liquor licenses for 1918 expired on Dec. 18, there had been 1154 applications filed, including 13 new ones. Last year there was a total of 1198 applicants, 10 less than the previous year. These figures show a steady falling off in the number of saloons, but not to the extent expected, as the population of Schuylkill county is but 220,000. The law and order society and the Public Safety Committee is hopeful of knocking out a number of applications on the pleas that they are not necessary and that too many saloons hamper the production of coal.

Columbus, Ohio.—The Columbus Coal Shippers Terminal Pool Association, which met last week with traffic officials of railroads entering Columbus, announces that it will not be ready to start operations Dec. 24 as originally planned. It is now expected that it will be started Jan. 1. Traffic officials of railroads offered their cooperation to aid in the pool's operation and complete harmony prevails. C. R. Moriarity, director of the parent pool, together with F. C. Baird, director of the Lake pool, will come to Columbus to help start the local pool. Offices have been secured in the Brunson Building. B. F. Nigh has been selected as director in charge.

West Tulsa, Okla.—Forty thousand tons of coal, now in storage at the Cosden Oil Refinery, has been tendered by J. S. Cosden, head of the Cosden oil interests, to the Tulsa School Board to be used in heating the school buildings of the city. The Tulsa schools have been forced to close during the recent severe weather on account of lack of fuel, as it was found impossible to heat the buildings with natural gas under the low pressure maintained in the mains. The coal tendered by Mr. Cosden has been accepted, or so much of it as may be needed, at prevailing market prices and will be used in heating the school buildings, all of which are equipped with furnaces or stoves.

Dallas, Tex.—Fixed coal prices for Texas will not be attempted at this time, according to official announcement made by Wiley Blair, Federal Fuel Administrator of Texas, from his headquarters in Dallas. Mr. Blair's announcement followed a meeting of the state advisory committee, composed of business men from all parts of the state, and a thorough canvass of the situation in this state with reference to retail prices of coal. Mr. Blair in his statement said that on the whole retail coal dealers of Texas were charging fair and equitable prices and were confining their profits to very narrow margins, and that under the circumstances no fixed price policy would be attempted at this time.

Cincinnati, Ohio.—In the United States Circuit Court of Appeals an opinion has been handed down granting the application of the United States Mortgage and Trust Co., of New York, for the appointment of a receiver for the properties of the Sunday Creek Coal Co., in the suit now pending for the foreclosure of the mortgage held on the defendant's properties. Objections of the coal company and John S. Jones, of Chicago, president, to this step were overruled by the court, which held that Federal courts have prior jurisdiction in the case over both the state court at Columbus and the bankruptcy courts. A special master will be appointed to take charge of the properties temporarily, and a receiver will be agreed upon later.

Market Department

GENERAL REVIEW

Milder weather and strenuous efforts on the part of fuel administration officials have rendered the general conditions slightly less tense. Efforts of the mine workers to secure production on church days has also produced beneficial results.

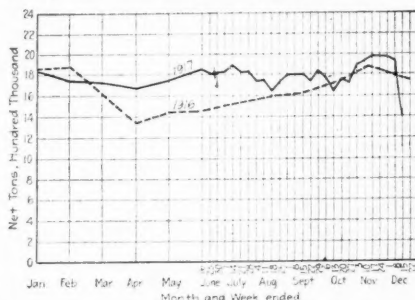
Anthracite—The consumption of anthracite has somewhat decreased during the past week. This has been due almost entirely to moderation of weather conditions, resulting in a less insistent demand for domestic fuel. The railroads have also, by a strenuous cleaning up of the congested conditions resulting from the great snow storm of early in December, been able to move a slightly greater tonnage than during the past two or three weeks. The efforts of the anthracite operators to induce the mine workers to produce a maximum tonnage have been reinforced by admonitions from various ecclesiastics high in the Roman church, urging the miners to labor to their maximum capacity even on Sunday and other church days, excepting only Christmas and New Year's Day. It is rumored also that the period of labor during the present war may be extended from eight to nine hours per day. All of these circumstances combine to render the situation less strenuous than it has been in the recent past. On the other hand, car supplies to the mines and movement all-rail, particularly to New England points, have been poor, and some suffering has resulted from a lack of adequate fuel supply. It is hoped that the use of Government locomotives, as well as those diverted to the East from points further west, will tend still more strongly to relieve the present situation.

Bituminous—The situation in bituminous coal is apparently but little less strenuous than formerly, the chief factor tending to relieve the situation being milder weather than formerly prevailed. On the other hand, there are certain symptoms which would indicate that the scarcity of domestic fuel particularly was not as great as was believed. Among these indications are the unwillingness of certain consumers who complained loudly that they were "freezing" to pay the contract price for coal, which had been commandeered to meet their needs. The distribution of a considerable tonnage of coal intended for Lake shipment did much to relieve immediate fuel needs in Ohio and lower Lake territory generally. On the other hand, such manufacturing districts as Michigan and New England are extremely short of coal supplies, and unless a considerable tonnage is received shortly many manufacturing plants and public utilities will doubtless be required to close down, at least temporarily. A strong sentiment prevails which would favor the compulsory shutting down of unessential industries, such as the manufacture of musical instruments, and the like. This would not only relieve a certain amount of traffic in raw materials and finished product, but would tend also to set free a certain amount of labor which might be more advantageously used in other pursuits. Proper priority orders will doubtless accomplish this result. Already many cities have adopted "lightless nights," this term being applied to the burning of electric signs and similar advertising illumination. In some places also apartment-house owners have adopted stringent measures to reduce the consumption of coal for heating purposes, while curtailment of street and interurban electric lines and abandoning of many passenger trains on various roads which were more or less superfluous, have all done much to conserve slender stocks of fuel. Complaints of shortage in bituminous coal are most pronounced among steam users, while the domestic consumers appear to be, if anything, better taken care of. It is apparent thus that although the production and receipt of steam coal is at least equal to that of last year, and in many cases far greater, the manufacturers of the country are running at much higher capacity than was the case a year ago.

A Year Ago—Storms and inclement weather delay movement and accentuate anthracite shortage. Bituminous market under heavy strain and liable to a severe upset. Transportation difficulties the worst of the season with numerous embargoes. Middle Western buyers bidding spot prices up to prohibitive levels.

COAL PRODUCTION

Zero weather and a heavy fall of snow impeding railroad traffic and surface operations at the mines caused the week's production to drop to the lowest point recorded since these bulletins were begun. The average daily production of coal (including that made into various grades of coke) for the week ended Dec. 15, was



1,402,594 tons. The lowest mark reached before since the first of June was 1,638,513 tons in the week ended Aug. 18, at the time of the coal strikes in Illinois and the Southern Appalachians. The storm affected southern Illinois, Indiana, Ohio, Pennsylvania, and West Virginia. It was especially severe in Ohio.

The production of beehive coke was also adversely affected, declining 12.6 per cent. during the week. The total output for the week is estimated at 538,131 net tons, an average per working day of 89,689 tons. Anthracite shipments fell off 22 per cent.

CARLOADS OF COAL AND COKE ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS WEEK ENDED:

District	Nov. 24 Dec. 1	Dec. 8	Dec. 15
Bituminous shipments, 114 roads...	199,385	182,275	198,161* 147,590†
Anthracite shipments, 9 roads...	42,936	37,533	40,566 31,672
Beehive coke shipments, 4 roads...	13,178	13,055	12,509* 11,047†

* Revised from last report. † Subject to revision.

BUSINESS OPINIONS

The Iron Age—In the closing days of 1917 the steel trade has the satisfaction of knowing that it will enter the new year free from the fear that present price schedules may be overturned. The War Industries Board, after a conference on Saturday with the Federal Trade Commission, has recommended to the President the indefinite extension after Jan. 1 of the prices promulgated late in September and those built upon them in the past three months.

Bradstreet's—Increasingly important governmental requirements, quickened retail trade due to cold weather and holiday buying, difficulty in operating leading industrial plants owing to paucity of fuel, and better than seasonal distribution by wholesale dealers as well as jobbers, the trends in the latter respect having been carried along by activity at secondary markets as distinguished from movements at the so-called primary centers where trade has receded, present the chief characteristics of this week's reports. Industry is strenuously trying to fill orders in the face of numerous handicaps flowing from shortage of cars, lack of fuel, insufficient supplies of labor and inclement weather.

The Dry Goods Economist—The week before Christmas, always a busy period in dry goods and department stores, has this year proved no exception to this rule. In New York and in other centers trade has been brisk, more especially as owing to unfavorable weather conditions in many centers during the first half of December the purchasing of holiday goods was delayed.

Marshall Field & Co.—Current wholesale distribution of dry goods is considerably ahead of the shipments for the same period a year ago. The total volume of road

sales for both immediate and future deliveries has been much in excess of the volume of the corresponding week in 1916. Merchants have been in the market in greater numbers. The market on domestic cotton continues strong. Collections are excellent.

Atlantic Seaboard

BOSTON

Wholesale curtailment of trolley service, and only strenuous efforts prevent large number of utilities from shutting down. Detention at Hampton Roads continues serious, although milder weather facilitates dumping. Rehandling plants getting bare, awaiting cargoes. Government requisitions embarrass factors with bunkering facilities. Fuel sent from Providence and Boston over wide area, because of slow movement all-rail. B. & M. embargo raised, and extra motive power promised. Receipts of Pennsylvania grades light. Anthracite shipments exasperating.

Bituminous—These are critical times for fuel in New England. A number of large plants are running from hand to mouth and a material cut in trolley service throughout Massachusetts has already been put into effect. Street cars are no longer heated and the railways are considering radical reductions in passenger service. One large trolley system was on the point of suspending when a spot cargo was diverted from another consignee and the central plant thereby enabled to run another three or four days. All kinds of steam users have now about made up their minds that an adequate supply of coal for the balance of the season is out of the question, and are making plans accordingly. Manufacturers with Government contracts expect that somehow the authorities will provide fuel, but how remains to be seen.

As detention increases at Hampton Roads and stocks at this end correspondingly diminish, many of the large corporations get apprehensive. Those inland as well as those served by lighters at Tidewater, after a certain tonnage in storage has been used, are dependent upon daily or weekly deliveries, these latter being based upon 3 to 4 trips per month of a fleet of steamers. If the colliers are held 8 to 15 days loading at Hampton Roads, it is easy to see how rapidly calculations can be upset. The Virginian Railway piers at Sewalls Point appear to have most of the aggravated cases of detention this week, although Newport News is not far behind. Two weeks' delay has not been exceptional since the cold weather set in. This week milder conditions have helped out the dumping, and already a slight improvement is notable at the piers. During the week of Dec. 9, it is said that but 42,000 tons was loaded for New England over all three terminals. In view of these conditions it is amusing to read in the press that there is plenty of coal at the piers, but the necessary marine transportation is lacking.

Mill cities, like Fall River and New Bedford, are facing fuel famine within a relatively short time. In both places by far the larger part of the tonnage is handled over dealers' wharves and the shortage of a few dealers will affect a large number of plants. Besides the slow loading a lot of difficulty has been caused by bad weather at sea. Tows have been delayed at Delaware Breakwater or at Hampton Roads a week at a time. Buyers are in something of a daze because there seems absolutely no alternative but to await arrivals. Small plants can now and then get a car or so at a time from some rehandling plant, but no sizable industry can be helped in this way.

It is said among the trade that it will probably be the policy of the Government to have this territory draw a larger and larger part of its supply from the Pennsylvania districts, the major proportion of the coal flowing to Hampton Roads to be devoted to Government services and for export. The trend is certainly in that direction, although Government requisitions on Pennsylvania mines are getting more frequent, and to the disadvantage of private industries that are dependent upon such operations for current supplies on contract. The Tidewater Coal Exchange has liberal supplies in the

pool at Philadelphia and at New York, for the moment, due largely, however, to delayed arrival of bottoms and to slow dumping.

The Boston & Maine embargo was raised after a few days and loading at the mines for this territory has been resumed. Congestion still prevails, however, at many points on the system. The railroad war board recently ordered the Erie R.R. to loan to the Boston & Maine 50 large locomotives to be sent here immediately. It was also ordered that 50 more be sent to the New Haven road, where the situation at some points is getting beyond control. It is said that in the Portland (Me.) yards there are 1700 loaded freight cars for the West, stalled because of insufficient motive power. These cars are loaded largely with lumber, household furniture and machinery. There is certainly a chance here for unified control to show what can be accomplished.

Meanwhile, the Tidewater rehandling plants are getting into serious straits. It is such plants that have been so largely relied upon for emergency deliveries, but all the proprietors are now conservative about commitments. One large plant at Boston, having room for at least 100,000 tons of storage, was swept clean this week and all deliveries shut off, pending arrival of ships that have been delayed at loading port from one to two weeks. Up to now these rehandlers have been able to look after contract customers extremely well.

Government requisitions are expected to complicate local conditions still further. It is likely that all the dealers who have facilities for loading bunker fuel will soon have opportunities to coal ships for overseas. Naval and other overseas requirements are a first consideration, of course, but it almost seems some other provision could be made than that outlined above.

The Boston Elevated Railway, using normally 275,000 tons per year, announced last week through its president that more than 30 per cent. of its current supply had had to be purchased in the open market at prices up to \$9.50 alongside. These purchases were several weeks ago, but they show the effect of detention at Hampton Roads and the consequent loss of carrying capacity of steamers under charter.

No quotations are heard beyond the \$9.24 gross ton price, f.o.b. Boston for New River, which was lately withdrawn. On the next sales heavy demurrage items will be added, making the price nearer \$10 than \$9.

There seems to be no free coal whatever for delivery all-rail. The Government price is no more popular than in September, and it makes one shudder to think of the free coal that might have come through in September, October and November had the smaller operators been allowed to charge a remunerative price. Receipts of Pennsylvania coals are light and are confined for the most part to the inferior grades. The Government has the first chance at the better coals, particularly those on the Navy acceptable list.

A few are looking forward more or less anxiously to conditions when present contracts expire. Some expire Jan. 1, although the great bulk of them were written from Apr. 1. Will the Government pool the output from all the fields? This is an interesting question.

Anthracite—Receipts by water from Philadelphia and New York are exasperatingly light. Several Boston dealers are absolutely out of stock and for current deliveries are obliged to rely upon what car shipments come through. Undoubtedly there has been a good deal of hoarding on the part of thrifty householders and what suffering there is falls upon the poorer classes who buy coal as they need it. In more than one instance, dealers find on casting up their accounts that in 1917 they have received as much coal as in 1916, showing that all season consumers have bought more heavily than usual and also that new trade goes to the dealer who has a stock.

Steam sizes, particularly No. 3 Buckwheat, seems to come forward in liberal quantities without much delay. The fact that these sizes are not being shipped in foreign cars on certain of the originating roads is understood to be the reason for ready shipments, as compared with domestic sizes.

Effective Dec. 22, the Boston local fuel committee authorized an advance of 35c. per net ton on the retail prices of broken, egg, stove, chestnut and pea, except on small lots to the poor who are still given the privilege of taking from the wharves at the same price as before. The reason for the advance is stated to be the recent wholesale advance of 35c. per gross ton, increased degradation offsetting the difference between net and gross. Increased water freights, however, did not enter into the reckoning, although the dealers had expected they would. The new price is \$9.85 for domestic sizes and \$8.85 for pea.

NEW YORK

Committee on Fuel Conservation appointed. Anthracite market conditions shows no improvement. Cellar-peddler prices fixed. Free coals out of the market. Bunker-coal scarcity ties up shipping. Many vessels waiting for supplies. Stocks low and situation becomes critical. Car supply very poor.

Anthracite—With consumption remaining heavy the situation here shows no relaxation. The Fuel Administrators have had a busy week endeavoring to untangle the difficulties and trying to make it easier for consumers to obtain coal and at the same time have the railroads hurry shipments to Tidewater. To facilitate matters Reeve Schley, fuel administrator for New York County, opened a branch office on the lower East Side of Manhattan, to which the residents of that section can go with their complaints of their failure to secure coal.

As a result of complaints that some cellar dealers were charging exorbitant prices for fuel, prices for this class of trade were fixed and one of the largest retail dealers posted notices stating that cellar dealers must not charge more than 60c. a hundred pounds for coal sold on the cash-and-carry basis, and 70c. a hundred pounds for coal which is delivered. Failure to live up to the order will result in the dealers' supplies being cut off.

State Fuel Administrator Wiggin also announced the appointment of a Fuel Conservation Committee, consisting of Harry T. Peters, of Williams & Peters; John W. Whiteley, of Whitney & Kemmerer; Walter S. Sullivan, of the Mutual Life Insurance Co.; George D. Pratt, State Conservation Commissioner; Reeve Schley, New York County Fuel Administrator, and G. M. Dahl, First Vice-President of the Chase National Bank.

These have been strenuous times for the industry here. Supplies have not increased if one may judge from the constant demand being made on shippers. That the situation is not more serious must be attributed to weather conditions which have been much milder than the previous week.

Operators have put forth their best efforts to alleviate conditions and in this they have been ably aided by their employees, some of the latter going to the mines on Sunday. They have promised to further assist by working on church days and if they follow the advice of their leaders will take but one holiday this season, that being Christmas. It is also possible that their work day will be increased to nine hours instead of eight.

While the operators are doing their best to furnish coal the railroads are congested, and transportation, except in a few instances, has been bad. One of the big coal-carrying roads had an embargo on coal shipments to Tidewater a few days last week. One or two other roads rushed solid trains of coal direct to Tidewater from their mines, and by means of their own tugs and barges distributed supplies quickly to their customers. A dense fog across New York Bay practically suspended shipping one day last week.

Conditions have caused the apartment-house owners and real estate agents to take measures to curtail heat by banking fires from 10 p.m. to 6 a.m.; reduce steam pressure to the minimum at 11 a.m. and not start high pressure until 4:30 p.m., and to conserve the use of steam wherever possible.

There is the same heavy demand for all sizes of domestic coals, including pea coal. Buyers are willing to take any size and are mighty glad to get something, no matter what. The loading piers are free of any supplies except those under contract.

There is just as much activity in the steam coals. Buckwheat No. 1 is scarce, as are rice and barley. Boiler coal is in good demand and considerable culm is being shipped.

The retail situation is troublesome. Supplies are down to rock bottom with receipts a little more than 50 per cent. much of the time. Dealers endeavor to apportion their stocks as to needs, but frequently discover where a customer is trying to impose upon them.

A resolution is before the Board of Aldermen requesting County Fuel Administrator Schley to appear before it or a committee of its members to tell what steps have been taken by him to prevent a "recurrence of the hardships heretofore existing and to explain the reason or cause for such existing conditions in order that the same may be remedied forthwith."

The board also amended the ordinance relating to the sale of coal by providing that all coal sold in baskets, bags or other receptacles must have the weight plainly marked on the outside in solid Roman capital letters at least 1 in. in height.

Current quotations, per gross ton, f.o.b.

Tidewater, at the lower ports, are as follows:

	Circular	Individual
Broken.....	\$6.30	\$7.05
Egg.....	6.20	6.95
Stove.....	6.45	7.20
Chestnut.....	6.55	7.30
Pea.....	5.05	5.80
Buck.....	4.30@5.00	5.75@6.00
Rice.....	3.75@3.95	4.75@5.00
Barley.....	3.25@3.50	3.70@3.95
Boiler.....	3.50@3.75	4.00@4.50

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—A look at the amount of shipping tied up in this harbor because of the lack of fuel is enough to convince one that conditions are serious. Early this week it was estimated that more than 150,000 tons of shipping were awaiting bunker supplies and the owners had appealed to the Fuel Administration forces for help. Among the vessels were five passenger ships. The situation was unprecedented for this harbor.

As in the anthracite regions, producers and mine employees are ready to do their "bit," but the railroads are unable to furnish cars for the transportation of coal. Car supply was about as bad as it could be. One operator, whose mine is located along the Pennsylvania Lines, said he had received 3 cars in one week while another operator, it was said, had received 4 cars. Other operators estimated the car supply at about 10 per cent. Those mines whose product is taken by the railroads are working better time.

Conditions here are about as serious as they can be. There is no such thing as spot coal here and large consumers with contracts are using up the last of their reserve stock, with no immediate prospect of replenishing it.

The matter of contracts is coming to the front now. Several good-sized ones expire around Jan. 1 and under the rules of the Fuel Administration must be renewed, if at all, at the Government price, and then only after supervision by the Federal authorities. As it is not likely that many of the operators will enter into contracts at the low prices, some shippers predict that the supply of free coals will gradually increase.

Owing to their storage piles and contracts, some of the public-service corporations have not as yet felt the stringency of the market.

It would not be much of a surprise to the trade if there is a further revision of prices as many look upon the recent increase in the price of bunker coal and coal for export as a forecast that better prices may soon be expected for all bituminous coals.

One of the loading piers was said to be entirely out of coal early this week, with many boats lying near-by waiting for cargoes.

PHILADELPHIA

Anthracite shortage causes alarm. Better weather and coal administration give relief. Supply of 15,000 tons daily assured. Retail deliveries closely supervised. Flat gross retail margin recommended, also the wiping out of individual differential. Bituminous situation still critical. Large plants close. Non-essentials being eliminated. Car supply unimproved. Government helps with motive power. Bunker prices cause comment.

Anthracite—The city had a genuine fright over the coal situation this week, principally because the shortage in production of the previous week had just begun to make itself felt. This was particularly true in the early part of the week and both the press and public became greatly alarmed. This feeling was only allayed when the thermometer rose and the local coal committee and the state fuel administrator made personal appeals to the national fuel administrator at Washington.

As a consequence the fuel committee here has devised a plan, whereby a supply of 15,000 tons of anthracite has been guaranteed to the city daily. The committee will determine the dealers most in need of coal and will direct the shippers to make consignments accordingly. There is no doubt that the mining companies will cooperate in the plan, but some fear is expressed as to the ability of the railroads to handle the coal without congestion.

The dealers have been warned to exercise the greatest care in coal distribution. According to orders just issued by the fuel committee, no retail dealer is to deliver more than two tons of coal in ten days to any one household, and must not make any deliveries then unless the supply on hand will not last 15 days. In order to keep in close touch with this phase of the situation, the dealers are compelled to make a report to the chairman prior to Dec. 27.

of the consumers to whom more than four tons of coal have been delivered during the month, with the exact tonnage so delivered.

The fuel committee has abandoned the practice of issuing red cards signed by physicians calling for the immediate delivery of coal on account of illness. The scheme failed because it was abused by the physicians, who were careless in handling the matter. The newest instructions compel the dealer with coal on hand to deliver to homes nearest the yards where a case of sickness has been duly authenticated, regardless of whether it be a former customer or not.

At the end of the week the retail trade was much cheered by the news that the plan for a gross margin of \$2.50 on all retail sales had been approved by both the state and local fuel bodies. This decision was arrived at after the report had been made by the certified accountants who had examined the books of 12 representative retailers as to the cost of doing business. The recommendation has now been referred to Doctor Garfield, and if it is approved by him, it is estimated that present prices will be raised from 35c. to 50c. per ton. The present range of retail prices is now about as follows: Egg, \$8.60 to \$9.10; stove, \$9 to \$9.45; nut, \$8.80 to \$9.30, and pea, \$7.25 to \$7.80.

Chairman Lewis, of the local committee, has submitted a report to the national administrator recommending the abrogation of the order allowing the individuals 75c. per ton in excess of the company prices for coal at the mines. The chief agitators against this differential have been the retailers and they have succeeded in convincing the chairman of the difficulties that beset them in establishing a fixed price for coal. There is no doubt that strong opposition will be waged by the independents against the taking away of this margin.

The prices per gross ton, f.o.b. cars at mines for line shipment and f.o.b. Po. Richmond for Tide, are as follows:

	Line	Tide		Line	Tide
Broken.....	\$5.90	\$6.05	Buck.....	\$3.15	\$3.75
Egg.....	4.80	6.00	Rice.....	2.65	3.65
Stove.....	5.05	6.35	Boiler.....	2.45	3.55
Nut.....	5.15	6.40	Barley.....	2.15	2.40
Pea.....	3.75	4.65			

Bituminous—The situation from the standpoint of supply grows worse locally and recently several of the largest manufacturing plants in the city have been closed down for lack of fuel. One firm employing 1000 men and doing a large proportion of Government work was compelled to suspend for two days, when a supply sufficient to keep going a few days was received.

A large proportion of the coal now being received is shipped on priority orders and it is predicted that eventually the manufacture of non-essential goods will in that way be eliminated. Many of the coal men are advocating the complete shutdown of plants making such luxuries as musical instruments and pleasure vehicles, insisting that there will not only be a saving in fuel but also a conservation of transportation in handling the raw and finished product.

The car-supply situation does not in the least improve. One operation with a rating of 26 cars per day, during the past month received only an 11 per cent. supply. The past week it received eight cars, and up to Friday of this week its supply has been four. This firm has 9000 tons weekly of commercial coal under contract. In addition the Government has issued priority orders for 1000 tons of this, most of which has been directed to be shipped within 10 days.

The increase of \$1.35 in bunker coal as allowed by the Government has occasioned much comment, inasmuch as most of this business is handled by the largest shippers, with a large proportion of private equipment. The new price is made effective as of Jan. 1, at a time when these companies have a considerable tonnage of high-priced contracts expiring. This will have a tendency to keep out of the market what was expected to be a fairly large proportion of free tonnage at the \$2.45 Government price. On account of severe storms recently delaying the movement of vessels, there has been much interference with the Tide trade.

As to the rail situation, there cannot be the least doubt that the companies are exerting every effort to relieve the situation and, as a matter of fact, are moving more freight than ever before in the history of the country. The Government is also assisting the roads to a material extent, as this week quite a number of U. S. Army locomotives, which have been constructed in this city for use in France, made their appearance on the railroads hereabouts. In addition, some of the locomotives sent here from the West have arrived and are being put to use.

BALTIMORE

Bituminous situation still tight, but emergency needs are all being cared for. Anthracite supplies run about 25 cars a day, which is below real needs. New prices for small-lot sales.

Bituminous—The soft-coal situation here is still tight, but by dint of cooperation between jobbers and producers with the fuel administrator here the emergency needs are being cared for. Many large concerns are traveling on short supplies, however, and a severe spell of weather might block things in such manner as to create famine-like conditions anew. The Christmas and New Year holidays are expected to cut production at the mines, but as poor car supply had already done that the difference will not be great. Cardinal Gibbons, in a note to Fuel Administrator Garfield, has suggested that miners work during this crisis on all except Christmas Day and New Year's Day, but this advice is not so generally accepted as could be wished.

At Tide here the supply has run light, except for some coal specially sent for Government colliers. In this relation one collier, the "Cyclops," loaded 8673 tons in five hours and twenty minutes, or at the rate of 1650 tons an hour, at the Curtis Bay piers of the B. & O. The public service corporations here, such as the lighting company and electric railways, are still traveling on short coal supplies, and several big industries, such as the Bethlehem Steel Co. plant, have not attempted to open in full. By distributing small surpluses over contract necessities, jobbers have kept smaller plants here going.

Anthracite—Receipts of hard coal are at present averaging about 20 to 25 carloads a day, whereas the normal supply, outside of the shortage that already existed here, should run around 40 cars a day. This coal is being distributed as far as possible to take care of domestic and institutional needs where there is no supply on hand or where the supply is almost exhausted. Quite a large number of persons are now supplementing their ordinary heating apparatus by the use of gas or oil stoves.

The Fuel Administration here has set a new price for small sales. The bushel, of 80 lb., is to be sold at the yards at 35c. for pea coal and 45c. for other hard-coal sizes. The delivery price per bushel is 40c. for pea and 50c. for other sizes.

Lake Markets

PITTSBURGH

Traffic conditions prevailing before cold wave not fully restored. Mills and coke ovens still short of coal.

There was a further improvement in traffic conditions on the railroads late last week, but shipments remained somewhat below the average. Receipts of coal at works increased more than shipments. The outcome of this week's operations is uncertain as it is difficult to estimate how much the holiday will affect the supply of cars and the supply of miners respectively.

The trade has now come to the conclusion that the railroads can hardly recuperate fully from the effects of the cold wave that spread over the Central West Saturday, Dec. 8.

It lasted only about three days, and if there was to be a recovery it should have occurred by this time. It is surmised that many locomotives were put out of commission and will have to go through the already crowded repair shops.

Supplies of coal to the byproduct coking plants have improved but are still not sufficient for full operation. This is a fairly good test of the situation, for the reason that the byproduct coke plants all have priority orders for coal, the authorities at Washington being particularly interested in the byproducts used for the manufacture of explosives. Several of the steel mills are still short of gas and steam coal, and they would feel the shortage still more were it not that on account of shortage of pig iron, due to insufficient movement of beehive coke, their operations are curtailed from that cause.

Free coal is to be had now and then in the open market, but its sale seems to go largely by favor, although as far as definitely known sales are at the prescribed prices, which remain as follows: Slack, \$2.20; mine-run, \$2.45; screened, \$2.70, per net ton at mine, Pittsburgh district, with 15c. permissible to be added when sales are made by dealers.

BUFFALO

Anthracite improving, bituminous going the other way. The shortage of cars is still blamed for lack of coal. A leading reason is the immense activity of the manufacturing. Worst yet to come.

Bituminous—Most of the shippers agree that there is no help for the situation and that many factories will have to shut down in a few days at the best. They say that the railroads are simply unable to move coal enough to keep up the needed supply. At the same time it is claimed that the roads are doing more than they ever did before, as a rule 25 per cent. more than they were doing a year ago, but the difficulty is that the mills as a rule are trying to do anywhere up to double the amount of business that they did last year, so what can the roads do?

As to prices the situation has not changed except that some coal has been received in box cars from wagon mines, which get the extra 75c. a ton allowed for such work. This coal has been made to help out considerably. Regulation prices are as follows per net ton f.o.b. Buffalo:

	Slack	Lump
Pittsburgh.....	\$3.75	\$4.25
Bessemer.....	3.70	4.20
Allegheny Valley.....	3.60	4.10

Anthracite—The condition is improved of late, one company seeming to be determined to stop the teasing for coal here. The weather was so bad and the snow so deep that it was difficult to make delivery. It is reported that consumers were just as exacting as ever. Buffalo appears to have been the center of the snowfall, most of which has now gone.

The Lake fleet did not all get to destination in December, on account of the big snowstorm of the 9th. Two steamers, one of which was ashore at Point Pelee, delivered their cargoes at Detroit, one at Cleveland and one returned to Buffalo, all carrying about 45,800 net tons, which reduces the December total materially, though all will have to be credited to this port.

DETROIT

Michigan coal administrator advises closing industrial plants not engaged in war-munition work. Mass-meeting of manufacturers, coal men and others vote to ask retirement of Federal and state administrators.

Bituminous—Shipments of bituminous coal are slow to arrive. Detroiters who had been encouraged to believe that approximately 5000 cars of coal would be sent to the city from the congested tracks of the Chesapeake & Ohio were considerably shocked on return of Andrew Lorimer from Russell, Ky. Mr. Lorimer, a local dealer, had been sent South as the personal representative of the state coal administrator to look after getting the coal moving toward Detroit. He reported on his return, after 10 days in the South, that only about 1500 cars of coal were available for Detroit, the greater part of the remainder comprising stock exempted for Government use.

This coal has been arriving in small lots of 20 to 50 cars and without regularity, while the scanty supply available for the needs of a city using about 700 cars a day is being pieced out by coal unloaded from the Lake freighters "Thomas Barlum" and "Richard J. Reiss." These cargoes were seized by the Federal administration to assist Detroit. The "Barlum" had about 8000 tons of soft coal and the "Reiss" about 7500 tons of anthracite. The steamer "B. F. Berry," with hard coal, also was seized, but unloading operations were delayed by various obstacles.

W. K. Prudden, Michigan coal administrator, in Washington, Friday, Dec. 21, wired the recommendation that all industrial plants in Michigan not engaged on work necessary for the war, suspend operations from Dec. 22 to Dec. 29. Previous to receipt of the message arrangements had been made by a number of manufacturers and coal men for a mass-meeting, the night of Dec. 22. At this meeting of about 300 citizens, demands were made by the speakers that both Mr. Prudden and Dr. H. A. Garfield, Federal coal administrator, resign, and vigorous opposition was expressed to the proposed closing of the factories, as imposing severe hardship on wage earners, who would be thrown out of employment and many of whom are without resources. A resolution adopted calls on President Wilson and the national fuel administration to accept the services of an advisory board, comprising practical railroad and coal men. A committee was appointed to make personal delivery of the resolution to the President.

Meantime Detroit's coal supply is extremely limited and it is practically impossible to get delivery of either bituminous or anthracite from local retailers. Most of the retailers decline to accept orders, contingent on their getting coal. More than

2000 homes were reported without fuel last week, while the greater number of manufacturing plants, including some working on war munitions, were scantily supplied.

Lake Trade—Navigation closed, Dec. 22, with the arrival at Lake Erie ports of the last of the downbound fleet of grain and ore carriers, after a struggle with the ice that was practically continuous from their departure from Lake Superior ports. Some of the vessels were two weeks on the trip, despite the aid of ice-breakers. Nearly a dozen carriers that had loaded coal failed to complete the upbound voyage and were seized by the coal administration. Besides the three vessels at Detroit, the "S. H. Robbins" and "Charles S. Hebard" were taken at Port Huron and four ships at Toledo.

COLUMBUS

With a large percentage of the Lake coal distributed and milder weather prevailing the tense situation in Ohio has been relieved to a large degree. Some inconvenience is still caused by short fuel stocks.

The severe cold, which prevailed in Ohio recently, is passed to a certain degree and conditions are again approaching normal. Through the action of the Ohio Fuel Administration, working with state officials, the 2500 cars of Lake coal, which was on track at the close of the season, have been distributed to needy domestic and steam users. As a result of this distribution acute suffering has been avoided and a better feeling is shown. But there is still much concern felt over the situation and with the coming of another cold snap strenuous conditions will prevail.

Domestic consumers are still short of fuel and many calls are still being taken care of by the local fuel committees. One of the greatest difficulties in the domestic trade is the lack of delivery facilities. The icy condition of the street and the small orders have made it impossible for all demands to be taken care of. In many instances the consumer furnished the cartage for coal deliveries. Consumers are not demanding any certain grade but are willing to accept almost anything.

Prices on short tons, f.o.b. mines, are as follows:

	Hocking	Pomerooy	Eastern Ohio
Rescreened lump	\$2.70	\$3.05	
Inch and a quarter	2.70	3.05	\$2.70
Three-quarter	2.70	3.05	2.70
Nut	2.70	3.05	2.70
Egg	2.70	3.05	
Mine-run	2.45	2.70	2.45
Nut, pea and slack	2.20	2.45	2.20
Coarse slack	2.20	2.45	2.20

CINCINNATI

Less severe weather has prevailed, but the fuel situation otherwise is only slightly improved. Dealers have been able to distribute small supplies to consumers, but manufacturers are without fuel.

The extremely severe weather which prevailed for ten days in this section has given way to much milder temperatures, and this has served to reduce the distress resulting from the limited supply of coal available. So far the measures taken to secure a more expeditious movement of coal from the mines and its prompt distribution among consumers have had comparatively little effect. However, small supplies have been delivered to retail dealers, so that they have been able to distribute lots of one and two tons to domestic consumers in actual need of fuel for heating purposes.

It is the large industrial consumers who are most nearly in distress just now, as there has been virtually no betterment of conditions as far as they are concerned, and the cessation of operations will be necessary, it is declared, unless the situation improves shortly. Many cases of large factories, depending upon coal for their operations, with a supply on hand for only a day or so, are reported. While Sunday and the Christmas holiday may possibly enable them to tide over the shortage, it is feared that this will also hold up production of coal and its movement, unless suggestions that miners keep working are accepted. And operators are not sanguine of this.

LOUISVILLE

Transportation facilities control market. Mis-read order affects southeastern Kentucky. Coal seized by fuel administrator commanded top price and disclosed many fakes among famine howlers.

The car supply and transportation facilities have again been the dominating feature of this market. Movement of trains is better, the embargo at the Cincinnati gateway has been lifted but return of empties to the mines has not been at all what it was hoped emergency efforts of the fuel administrator would produce. A 50 per cent. supply and

half-time operations at the mines in western and southeastern Kentucky have been the maximum, according to operators in both sections. Moderating weather is bringing relief, however, and better production and shipping are looked for.

On recommendation of coal operators and dealers supplying them, numbers of industrial concerns in Kentucky suspended in whole or part for the holidays, so that the coal trade might be able to catch up with their requirements. With production and deliveries below the requirements for the week, operators have been undertaking to carry out the priority orders as to utilities, munitions and Government contract plants and domestic business. The latter has fallen off sharply with return of mild temperatures. Urgent representations made to the mine workers to abstain from holidays have hardly been necessary, in view of the fact that the workers have been on part time too long as it is.

A mis-read order was taken by operators in southeastern Kentucky to demand that all coal produced should be supplied to the railroads. Most of them were up to their contracts with lines on which they were situated and found it necessary to go into the open railroad market and find railroad buyers for the coal they produced, during three-days, until a complaint to Washington corrected the mistake.

Coal men have been much edified during the week by the outcome of the action of the State Fuel Administrator in seizing coal on track in Kentucky and diverting it to Kentucky points to relieve what was largely and urgently represented as utter famine. This coal was generally a high-grade eastern Kentucky fuel and, at retail, commanded a price averaging around \$6.80 a ton. Hundreds of retail and industrial customers of dealers who bought this coal through the Fuel Administration and had it transported to numerous centers found that they were not "freezing to death" as fast as they had said they were and largely declined to buy. Many dealers now have this coal on hand and many tried to cancel the contracts when it was too late.

BIRMINGHAM

Tense domestic situation relieved by milder weather, allowing some stock accumulation. No change in the steam-market conditions, the demand being as strong as ever. Efforts being exerted to maintain normal outputs during holiday season. Car supply fair under existing traffic conditions.

Every effort is being made by operators to hold coal production as near normal proportions as possible through the holiday season and only Christmas day will be observed in the working schedule. The mines of all the larger companies worked last Sunday and will operate again next Sunday and New Year's day. While it is not expected to produce a normal week's tonnage, mine workers are showing a disposition to cooperate more heartily in relieving the coal shortage and a fair production is expected. Prominent negro speakers have been visiting the mining camps in an effort to stimulate the members of their race to a fuller and more patriotic sense of their duty, and good results in the shape of increased production from 20 to 25 per cent. have been reported at mines of the Alabama Fuel and Iron Co. and at other camps where addresses have been made.

Inquiries for domestic coal have not been so insistent the past week on account of the mild weather which has prevailed, but coal men report the demand strong at local yards and retailers throughout this territory are exerting every effort to accumulate stocks before another cold spell. However, their endeavors are not showing very fruitful results, as the regular weekly inventory submitted by the coal dealers in Jefferson County showed a total of 3500 tons in the yards, which is the smallest stock on hand at any time this winter. Only 1500 tons was reported en route to such yards.

The steam trade is not affected by weather conditions and remains in a strenuous condition. Every ton possible is being mined and moved on contracts and such spot business as the mines can accept.

Coke

CONNELLSVILLE

Car supplies improving only slightly. Holiday curtails production. Inquiry for contract coke does not result in business.

Car supplies in the Connellsville region at the close of last week were better than at the opening, and this week opened with a fair supply, but there is no likelihood of

sufficient supplies to make up for the Tuesday holiday. Ovens were charged so as to have the holiday interfere as little as possible with the drawing of coke, but it is improbable that there will be enough cars to receive the coke ready on Wednesday.

Blast furnaces have been better supplied with coke the past few days as quite a tonnage that was tied up en route has been delivered and a few furnaces that were banked early last week have resumed. Many furnaces were banked over Christmas, giving the men a holiday, while any coke thus saved will be sure to come in useful at no distant date.

For the past few weeks Connellsville coke shipments have been running at the rate of about 300,000 tons a week, as a general average. It is estimated roughly that from 50,000 to 75,000 tons a week more would be required to serve fully the blast furnaces depending on the region.

Confidence is now expressed that the first half of the Carnegie Steel Co.'s byproduct plant at Clairton will be in service by Apr. 1.

This comprises 640 of the total 1280 ovens, and the output of the section should be 50,000 tons weekly. This would be altogether a relief to the railroads, as the coal is to be moved by water to the ovens, and the coke that has to be shipped will also move by water.

There has been some inquiry for coke for the first half of the new year, but no business has resulted, operators having little assurance that they will have coke to spare and being rather indisposed to sell at the fixed price. A curious feature of the situation, and one not readily understood, is that when the Government price was fixed for coke, Sept. 24, it was generally stated in the trade that some operators had previously sold for the first half or all of 1918 while they had not put a corresponding tonnage under contract for the remainder of the present year. The inference was that there would be more free coke before Jan. 1 than thereafter, yet there has been practically none to be seen. The market is quotable at the set prices for beehive: Furnace, \$6; 72-hr. selected foundry, \$7; screened, over 1-in., \$7.30, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Dec. 15 at 285,347 tons, a decrease of 22,556 tons, and shipments at 282,487 tons, a decrease of 27,642 tons. The week reported on is the week of the cold wave, and the figures reported represent a larger movement than the trade estimated at the time.

Birmingham—An unusually strong inquiry has been experienced in the Birmingham coke market the past week, the requests for the product coming from points not heretofore heard from during this year's stringent coke shortage. One inquiry was received from Port Huron, Mich., and others came from equally remote territory. However, there has been no increase in production recently and little tonnage is available for the spot market, such being readily absorbed in home territory. Box-car equipment continues scarce and deliveries on Pacific Coast business are much behind. As in the coal industry, every effort is being exerted to maintain maximum production during the holiday season.

Buffalo—The situation is not changing, though some of the consumers are noting that they are paying on contract a good margin over the regulation prices of \$7 and \$8 for foundry and furnace at the ovens, for the assurance of a supply. What is to be done when the contracts run out has not been discovered. How the furnaces have been kept running at all is quite as hard to understand. So far there is no report of shutdowns, all the furnaces in Buffalo, North Tonawanda and Port Colborne, all of which belong to Buffalo, being active.

Middle Western

GENERAL REVIEW

Cars and motive power still the paramount issue in the supplying of fuel.

The past week has been a strenuous one for the coal producer and sales offices as well as the railroad companies.

Shipments originating in the Illinois field that have ordinarily taken from 5 to 10 days to get to destination, have taken from two to three weeks. In some instances coal moving only a short distance on local lines has been delayed badly, due to the congested condition of the railroads. The Chicago & Eastern Illinois, a heavy purveyor of coal, has placed at the mines only a few empty coal cars in the last ten days, in the meantime diverting all its power possible to the moving of loads that accumulated prior to the storm, two weeks ago.

Both operators and miners are in excellent shape to produce and load maximum tonnage, and are anxious to cooperate in the fullest possible measure with the Fuel Administration in attaining the desired results. They are badly handicapped, however, for the need of more efficient service by the railroads.

The settlement of labor difficulties in the Southwest has put the operators in that field in excellent position to fully satisfy the demands made on them for coal. In all the domestic fields the car shortage has been the keynote of the trouble experienced, which has materially affected both the operators and dealers. Mr. Lampkin, of the Federal Fuel Board, it is claimed, is well pleased with the manner in which the recent heavy demands have been met on the part of the dealers. He states that little trouble has been reported with the exception of short-weight complaints, all of which are promptly checked and remedied in the quickest possible manner. Almost all such reports are found to be groundless, and the few dealers that are guilty are from the irresponsible class without a reputation.

The Zeigler, North Purity and Benton mines, in Franklin County, Illinois, are still closed. The first two recently had underground explosions, and at the latter, the top works were partially consumed by fire, thereby reducing the production of this county to a point lower than at any previous time for months. Press reports from St. Louis state there have been arrested 150 German spies, in this section of the state, but no definite information is obtainable regarding the story. Nevertheless there has been some suspicion that considerable of the trouble was originated by the enemy.

CHICAGO

The supply is far below the demand, with the trade willing to accept quantity and disregard quality.

In order to better understand the condition that now exists in Chicago, it is well to recall that early in the present year, the large steam users, because of high prices, purchased several large producing mines that heretofore served the domestic trade. Since that time these mines have served public utilities, withdrawing considerable tonnage from the commercial trade that had formerly found its way into the Chicago market. The natural result is that the industrial plants are getting more coal than the dealers. Again the war has caused to be developed large industries that are heavy coal users, and what was previously a market for a large tonnage of Western and Eastern coal has been deprived of a certain amount because of the various changes that have resulted.

In order to give the retailer some coal with which to meet the urgent demands, State Fuel Administrator Williams commandeered a supply from the Commonwealth-Edison Co. and will, if necessary, carry out a similar policy with other industries if the occasion demands it. There has been no change with the Eastern coal situation—very little coal reaching this market from the East.

Quotations in the Chicago market are as below, per net ton f.o.b. cars at mines:

MILWAUKEE

All grades of anthracite advanced 25c. per ton. Close of the Lake season finds Milwaukee fairly well supplied with coal.

Milwaukee coal dealers received a welcome holiday missive from the Federal coal administrator permitting them to add 25c. per ton to all grades of anthracite sold on and after Dec. 1. Consumers who paid cash during the interim will naturally escape

the advance, but all charges on the books will be increased to conform to the new rates. Egg size now sells at \$9.35, stove at \$9.60, chestnut at \$9.70, buckwheat at \$7.80 and anthracite dust at \$4.40. None of the other varieties of coal are affected by the order.

The last Lake cargo of the season is in port and Milwaukee's future coal supply will depend upon rail conditions. According to the record of the Chamber of Commerce the receipts by Lake were as follows:

	1917, Tons	1916, Tons
Hard coal.....	927,266	867,365
Soft coal.....	3,014,317	3,700,746
Total.....	3,941,583	4,568,111

Decrease from 1916, 626,528 tons.

Receipts by rail and car ferry will undoubtedly be considerably larger than last year.

According to W. N. Fitzgerald, State Fuel Administrator, the supply of anthracite on Milwaukee docks will be exhausted before February. He figures that the early closing of the Straits of Mackinac prevented 100,000 tons of coal from reaching Wisconsin. While the situation in regard to anthracite is about the same as in former years when rail receipts bridged the gap till spring arrived, railway congestion makes this solution problematical this year. As far as manufacturers are concerned, Mr. Fitzgerald apprehends no serious difficulty.

ST. LOUIS

Easier conditions prevail with mild weather. Terminal congestion has been eased and trunk lines are opening up. Car shortage still continues and mines working about half time. No Eastern coals, and situation is one that does not bode optimism for the future.

A much easier condition exists as the result of mild weather and the loosening up of transportation. The crisis in the local situation was reached on Dec. 14 to 17, and there has been a general easing up in conditions since that time, although the situation is one now that would cause considerable anxiety if there should be severe weather.

One of the principal causes of the trouble was the fact that the Terminal Railway, with about 150 locomotives, only keeps two days' supply of coal ahead, and when the roads are tied up the Terminal is obliged to confiscate coal right and left. This, it seems, was one of the principal reasons for the local shortage, inasmuch as the Terminal supplies are about 40 to 50 cars a day.

Fuel Administrator Crossley for Missouri issued an order that no more coal could be confiscated without permission first from the Fuel Committee, even by railroads, and if they needed coal that the Fuel Committee would direct them where to get it and what to confiscate.

The situation at East St. Louis was bad until the War Board took a hand in it, and the Fuel Administrator put a traffic manager on the job to see that the storage yards were cleaned out and the coal brought over. The result was that over 300 cars of domestic coal were placed for unloading on the tracks in St. Louis.

The normal requirements here at this season of the year are about 150 cars a day. The domestic supply on all coal is sufficient for the time being, but there is no coal in storage, and January is the big month for domestic orders.

The steam situation has not improved. The only thing that prevented St. Louis

from going lightless was the fact that the Union Electric had 5000 tons of coal in storage in North St. Louis.

The United Railways Co. was getting low on its supplies. This is accounted for by the fact that the power that usually supplies most of the light in St. Louis comes from Keokuk and when there is low water and ice in the river Keokuk is out of commission.

Both of these companies are still short of coal, and are unable to get any supply ahead to speak of. Large manufacturing plants are in much the same position. They are running at the present time after a few days' suspension, but are unable to get any coal ahead, and this makes the situation look serious for January.

In the Cartersville field the car supply has been better this week than was expected, but the bulk of the business as usual has been going to railroads and equipment for railroad coal seems to be getting the preference.

The Missouri Pacific and the local roads have not as much storage coal ahead as conditions would warrant and they are trying to accumulate some.

Working conditions in the Cartersville field have been good, but there is still a shortage of water for boilers and there continues to be all kinds of minor accidents and fatalities that keep down the tonnage.

In the DuQuoin field conditions are somewhat similar, and the mines in both of these fields are getting in between 50 and 60% working time.

The Mt. Olive field seems to be hard hit at the present time for equipment. Its mines have been idle more frequently than for several weeks past, and such coal as is produced is loaded on railroad business.

In the Standard field the congestion still continues on some roads and there are disputes between the trunk lines as to division of rates that have caused embargoes and other restrictions that have retarded the movement of coal and the return of empties.

The L. & N. Railroad received instructions from Washington the past week to accept billing to points in St. Louis without prepayment of freight. The B. & O. Railroad also had to back down on the same point.

Several mines in the Standard field are idle on account of no water and others have been idle two or three days, because the Illinois Central was unable to pull the loads.

Conditions in a general way are not good. The miners want work and can't get it, and this is causing some unrest among them. They take this out on the operator by refusing to work when there are cars available if there is any excuse at all.

Conditions in the terminals of St. Louis have improved considerably, and the Washash is getting in better shape but is not handling its shipments promptly.

The Local Fuel Committee advanced the price of coal, effective Dec. 17, 25c. a ton to take care of the additional hauling charges. Since that time there has been a price set on basket and less than load lots as follows:

In lots of 1 ton: Standard, \$5.25; Mt. Olive, \$5.50; DuQuoin, \$5.75; Cartersville, \$6. and Big Muddy, \$6.50.

In lots of 1/2 ton: Standard, \$6; Mt. Olive, \$6.25; DuQuoin, \$6.50; Cartersville, \$6.75, and Big Muddy, \$7.

In lots of 1/4 ton: Standard, \$7; Mt. Olive, \$7.25; DuQuoin, \$7.50; Cartersville, \$7.75, and Big Muddy, \$8.

In lots of less than 1 ton: Standard, \$7.50; Mt. Olive, \$7.50; DuQuoin, \$8; Cartersville, \$8, and Big Muddy, \$8.50, the maximum price rate, delivered on premises.

On basket coal retailed by the basket load, prices are set on a bushel of 80 lb. at 30c. on the bushel for Standard, and Mt. Olive, and 32c. for Cartersville and DuQuoin delivered on premises.

The prevailing market price here is, per net ton, f.o.b. mine:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump.....	\$2 65@2 80	\$2 65@2 80	\$2 65@2 80
3x6-in. egg.....	2 65@2 80	2 65@2 80	2 65@2 80
2x3-in. nut.....	2 65@2 80	2 65@2 80	2 65@2 80
No. 2 nut.....	2 65@2 80		
No. 3 nut.....	2 65@2 80		
No. 4 nut.....	2 65@2 80		
No. 5 nut.....	2 15@2 30		
2-in. screenings.....	2 15@2 30	2 15@2 30	2 15@2 30
2-in. lump.....		2 65@2 80	2 65@2 80
3-in. lump.....		2 65@2 80	2 65@2 80
Steam egg.....	2 65@2 80	2 65@2 80	2 65@2 80
Mine run.....	2 40@2 55	2 40@2 55	2 40@2 55
Washed.....			
No. 1.....	\$2 65@2 80	\$2 65@2 80	
No. 2.....	2 65@2 80	2 65@2 80	
No. 3.....	2 65@2 80	2 65@2 80	
No. 4.....	2 65@2 80	2 65@2 80	
No. 5.....	2 15@2 30	2 15@2 30	

Williamson and Franklin County rate is 87c.; other fields, 72c.

	Clinton and Sullivan	Knox and Greene	Eastern Kentucky	Pocah. and W. Va.	Penna.	Hocking	West Va. Splint
Dom. lump.....	\$2 65@2 80	\$2 65@2 80	\$3 10@3 25	\$2 60@2 75	\$2 60@2 75	\$3 05@3 20	\$2 85@3 00
Steam lump.....	2 65@2 80	2 65@2 80	3 10@3 25	2 60@2 75	2 60@2 75	3 05@3 20	2 85@3 00
Egg.....	2 65@2 80	2 65@2 80	3 10@3 25	2 60@2 75	2 60@2 75	3 05@3 20	2 85@3 00
Small egg or nut.....	2 65@2 80	2 65@2 80	3 10@3 25	2 60@2 75	2 60@2 75	3 05@3 20	2 85@3 00
Mine-run.....	2 40@2 55	2 40@2 55	2 85@3 00	2 45@2 60	2 45@2 60	2 70@2 85	2 60@2 75
Screenings.....	2 15@2 30	2 15@2 30	2 60@2 75	2 10@2 25	2 10@2 25	2 55@2 70	2 35@2 50
Washed slack.....	2 15@2 30	2 15@2 30					

